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TABLE OF CONTENTS

The Premature Infant W. R. F. COLLIS, M.D., and M. A. MAJEKODUNMI, M.D. 31

Wounds and Inflammation Treated by X Rays and Radium N. S. FINZI, M.B., and F. FREUND, M.D. 34

Sulphaguanidine in Bacillary Dysentery ANGUS E. BREWER, M.R.C.S. 36

Probable Tetanus Despite Inoculation with Toxoid R. J. MCGILL, M.B. 40

The Measure of Night Vision N. BISHOP HARMAN, F.R.C.S 43

MEDICAL MEMORANDA

A Case of Acute Aseptic Meningitis. A. B. CHRISTIE, M.D....41

Thrombophlebitis of the Cavernous Sinus: Recovery. A. R. C. DOORLY, M.B. 42

GENERAL ARTICLES AND NEWS

Refusal to Reinstate Police Surgeon after War Service....49

New Year Honours....50

CONTROL OF ELECTROMEDICAL APPARATUS 49

PREVENTION OF CRIPPLING....50

THE SERVICES....58

UNIVERSITIES AND COLLEGES....58

MEDICAL NOTES IN PARLIAMENT....58

MEDICAL NEWS....60

REPORTS OF SOCIETIES

SCOTTISH GROUP OF THE NUTRITION SOCIETY: Influence of Diet during Pregnancy 51

ACADEMY OF MEDICINE IN IRELAND: Adrenal Neuroblastoma....51

LETTERS AND ANSWERS

Income Tax—First Aid for Fractured Spine—Diphtheria with Perforation of Larynx....60

Epidemiology Section 59

LEADING ARTICLES

Treatment of Cancer of Larynx....45

Byssinosis and Bagassosis....46

ANNOTATIONS

Starvation in Europe....46

Combined Tuberculin and Radiological Survey....47

Surgery of Oesophageal Cancer....48

REVIEWS

Pathogenesis of Poliomyelitis....44

Spectroscopy of Vitamins and Hormones 44

Development of Cerebral Cortex 44

Notes on Books 44

OBITUARY

Dan Powell, M.D....56

H. Meredith Richards, M.D....57

William MacLennan, M.B....57

Hon. Murray MacLaren, P.C., M.D....57

L. R. Braithwaite, F.R.C.S. 57

W. H. Paine, M.R.C.S....57

SUPPLEMENT

Medical Students in Conference....5

Hospital Policy of B.M.A. 6

SCOTTISH HOSPITAL REGIONALIZATION 6

NIGHT MEDICAL SERVICE FOR LONDON 8

HEALTH PROPOSALS BY COMMUNIST PARTY 7

CORRESPONDENCE 7

H.M. FORCES APPOINTMENTS....8

CORRESPONDENCE

Pasteurization of Milk. ERIC COLDREY, M.D.; A. H. MACDONALD, M.D.; E. K. MACKENZIE, M.D....52

Control of Venereal Diseases. MARGARET RORKE, M.B.; HAMISH NICOL, F.R.C.S....53

Preparation of Hands for Operation. G. GREY TURNER, F.R.C.S....53

Erythroblastosis Foetalis. LEONARD G. PARSONS, M.D....53

High Flying for Whoopers. Sir LEONARD HILL, M.B., F.R.S....54

The Dysentery Carrier. H. M. STANLEY TURNER, M.D.; E. M. FRAENKEL, M.D....54

Joint Committee on Rheumatism and Orthopaedics. M. B. RAY, M.D., C. B. HEALD, M.D., and B. S. NISSÉ, M.D. 54

Tetanus. HUGH WILSON, F.R.C.S.Ed....55

Stilboestrol in Cancer. J. T. SHIRLAW, M.D. 55

Adder Bite. C. W. WALKER, M.D....55

Hand and Finger Lesions. J. N. BARRON, F.R.C.S.Ed....55

Prevention of Blindness. C. G. KAY SHARP, M.D....55

Phosphorus Poisoning and Blood Urea. R. E. REWELL, M.B....56

Periodic Medical Examination. H. F. BARNARD, M.B....56

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JANUARY 9 1943

THE PREMATURE INFANT: MANAGEMENT AND PROGNOSIS

BY

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There has been widespread discussion, with grave disagreement, between observers in various countries concerning the correct definition of prematurity. The obstetrical conception of prematurity is inacceptable from the paediatric point of view, because the dates given by pregnant women are notoriously inaccurate. Also, debilitating diseases in the mother have such a profound influence on the birth weight and vitality of the infant that a baby born under such conditions, even when it reaches term or sometimes goes past it, must be regarded as immature, as it tends to be under-developed and incapable of carrying on independent extra-uterine existence without special measures to help it.

The definition of prematurity now widely accepted is that recommended by the International Committee at Geneva in 1937, and agreed to by the British Paediatric Association in 1938; this gave the higher limit of viable prematurity as a birth weight of 5½ lb. and the lower limit as the 28th week of pregnancy, irrespective of the weight at birth. This standard has been found satisfactory in the Rotunda Hospital, where a special department has recently been established for the management of premature and weakly infants.

We are of the opinion that the question of the premature infant has not received the attention it deserves from the medical profession in general. A study of the public health reports of most of the thickly populated areas of Great Britain and Ireland reveals a considerable reduction in the infant mortality rate during the past ten years—i.e., from about 100 to 60 per 1,000 births. On the other hand there has been no appreciable reduction in the neonatal death rate, which still remains at about 32. This means that 50% of the infant mortality during the first year of life occurs within the first month. For a more detailed analysis of the neonatal death rate one must turn to the maternity hospital reports. The latest report of the Rotunda Hospital records 39 neonatal deaths from a total of 3,194 live births; of these 39 infants 25 (60%) were premature. In the National Maternity Hospital, Dublin, out of a total of 133 neonatal deaths 67 (50%) occurred among premature infants; and in the Royal Edinburgh Maternity Hospital in 1938 the proportion was over 50%. These figures show that the greatest single cause of death in the neonatal period is prematurity. Hence, if any appreciable reduction is to be made in neonatal mortality attention must be focused upon the management of premature infants and the causes of their death.

The Outlook for the Premature Infant

Before advocating the difficult and expensive measures necessary, however, it is wise to find out whether the saving of this group of infants is biologically sound. Opinions certainly differ as to the outlook for the premature infant. Capper (1928) maintains that it as often as not becomes the backward school child or a candidate for a home for imbeciles. On the other hand Wallich and Fruhinsholz (J. H. Hess, 1923) record that Newton, Rousseau, Voltaire, Couvier, Victor Hugo, Lamartine, and Renan were all premature-born. As late as Dec., 1940, we find Robert Hutchison, then President of the Royal College of Physicians and ex-President of the British Paediatric Association, when writing of premature babies saying: "I have a strong suspicion that, of those who survive, a large proportion turn out defective, either physically or mentally, or both."

To help to clear up the matter we have recently made a follow-up study of a group of premature infants which had passed through the paediatric department of the Rotunda Hospital within the last seven years. We were able to trace 45 of these. Seven had died—two within the first month of discharge from hospital, four during the first year, and one at the age of 2 years from bronchopneumonia following an attack of measles. The death rate in this group is only slightly higher than the infant mortality rate in the city of Dublin as a whole.

Of the 38 survivors nine can be said to have some slight abnormality—e.g., three of the children, all of whom are under 5 years of age, have not yet learnt to control the bladder. We feel confident, however, that they will eventually overcome this handicap, as some of the 7-year-olds whom we examined did not learn bladder control until they were 6 years of age. Four of the children have some speech defect (three stutter slightly and one has idioglossia). Those also, we believe, will overcome their handicap if carefully trained during development. One of the remainder has a right-sided hemiplegia: the right hand shows a choreiform movement together with a typical dinner-fork deformity. The lesion in this case would appear to be in the region of the basal ganglia. The child is at present 7 years old, and is able to walk almost perfectly in her special boots. Briefly, the clinical history is as follows:

Weight at birth: 4 lb. 13 oz.
How much premature: 6 weeks
Place in family: 8th
Mother's health in pregnancy: Severe albuminuria
Remarks: Baby very jaundiced at birth; was treated for icterus gravis

The other has Little's diplegia; this is an only child, and her mother is very intelligent and co-operative. Through her patient training the child has now learned to walk, and continues to progress as well as might be expected. She is now 3 years old. A brief summary of her hospital chart shows the following:

Weight at birth: 3 lb. 1 oz.
Nature of labour: Rather difficult delivery with version and manipulations
How much premature: 9 weeks
Place in family: 1st
Remarks: Crown of head appeared bruised. Child was 10 weeks in hospital, and was discharged weighing 6 lb. 3 oz.

To sum up, we found that out of the 38 surviving children 29 (76%) were perfectly developed and equal in weight and height to the average full-term infant for their age; of the remaining 9 only two were found to have severe defects, and in neither case could the result be attributed to their prematurity. The series is small, but we are justified in allowing these figures to support our previous belief, founded upon individual

observation, that premature infants, if without congenital stigmata and given special care, will generally grow up normally.

The Rotunda Paediatric Department

Some 15 years ago the Rotunda Hospital contained no paediatric department, intern or extern. There were no temperature charts for babies, and few notes were kept regarding their progress. It is stated that some 60% of all premature and sickly babies born in the hospital died before discharge. A paediatric department was then founded, and has since gradually developed into the following organization. Special nurseries with 31 cots have been set aside for the management of all premature infants and those suffering from other neonatal disorders. These nurseries are under the control of a paediatrician and managed by a paediatrically trained nursing staff. The normal babies are still managed in the general puerperal wards with their mothers, though each baby now has its own chart, on which its daily weight and temperatures, together with other clinical observations, are noted. A large extern clinic for babies born in the hospital or in its district has also been instituted. The method in the Rotunda Hospital differs from that in some other well-known maternity hospitals in the way normal and abnormal babies are managed in different departments. It has been adopted for two reasons. First, if a sister is given charge of all infants, normal and abnormal, the latter do not receive the same attention as if she has all her time to concentrate on them. Secondly, by leaving the normal babies with their mothers and their midwives in the wards both the latter are taught to manage the babies by ordinary simple methods which can be carried on in the home. It must be admitted that this exposes the normal babies to some degree of infection from visitors; but we believe the system is in accordance with the movement of medical opinion, for we visualize a time when every mother going into a maternity hospital will be provided by society with a room, or at least a cubicle, for herself and her baby during the few days she must spend within its walls. This will entail some modification of present arrangements in the puerperal wards, but the necessity for a nursery for the special cases will still exist.

The result of these measures is seen in the last report of the Rotunda Hospital, quoted above, the premature death rate having fallen from 60% to the present figure of 16%. The measures which are responsible for this very large reduction are discussed below under four headings: (1) maintenance of body temperature; (2) feeding; (3) nursing technique; (4) prevention of infection.

Body Temperature

In the premature infant the heat-regulating mechanism is imperfectly developed at the time of birth, and unless the infant is kept warm by the application of external heat the body temperature quickly falls. This inability to regulate and to maintain a normal body temperature is attributed to incomplete balance between loss and production of heat. The premature infant, if left unattended, rapidly cools down to the temperature of the surrounding air, and among the factors which favour such a rapid lowering of the body temperature are: (*a*) the relatively great area of heat-eliminating surface—i.e., the skin as compared with body weight; (*b*) the absence of subcutaneous fat, which increases the escape of heat from the body (Blackfan and Yaglou, 1933); (*c*) the very low production of heat; and (*d*) the failure to increase this by crying, kicking, and other activities when the environmental temperature falls below normal.

On the other hand, hyperthermia is very easily induced in these infants, as the heat-eliminating mechanism is equally imperfectly developed: the sweat glands do not function as freely as in full-term infants, and sometimes they fail to act at all. Incubators are now available for the maintenance of body temperature in premature infants; some modern ones are so constructed that the temperature and humidity of the air are automatically adjusted, and the infant can be fed, weighed, and the diapers changed without removing it from the incubator. Incubators are, however, very expensive, and in our opinion are too complicated for use in an institution that has a large number of infants to look after.

When one is confronted with the problem of a premature infant in the environment usually met with in practice the quickest and cheapest way to maintain its body temperature is by the use of three hot-water bottles suitably covered with blankets or flannels, one being placed on each side of the infant and the third at the feet. The water is changed in rotation every few hours. In more favourable circumstances electric pads or electrically heated blankets may be used with advantage, provided they are closely watched to prevent overheating. For hospital purposes or in nursing homes some form of heated cot is most efficacious. In the Rotunda Hospital a simple incubator cot is used, which consists of a rectangular wooden box, divided into an upper and a lower compartment by a removable "mattress" formed of zinc strips criss-crossed on an oak frame. In the lower compartment are fitted two high-resistance electric bulbs, which keep the temperature of the cot between 80 and 85° F. The upper compartment, well cushioned, receives the infant. This incubator cot is a modification by one of us (W. R. F. C.) of the type introduced by Allen of Belfast.

In addition to the use of the heated cot the temperature of the ward is maintained at 70 to 75° F. by central heating. Such a high temperature tends to dry the air, and premature infants do not thrive in a low relative humidity. To combat this difficulty a humidifier which keeps the relative humidity of the ward between 60 and 65% has been installed in the premature ward. Conditioned air is of course the ideal, but for financial reasons we have not yet been able to install the apparatus in the Rotunda nurseries. All infants weighing less than 5 lb. at birth are nursed in this specially heated ward of high relative humidity. When they are 5 lb. in weight they are transferred to a cooler ward with a temperature of 60 to 65° F. and a relative humidity of from 40 to 45%. It has been our experience that larger premature infants of 5 to 5½ lb. do not gain weight as readily when nursed in the heated and humid ward as when kept in the cool ward. In the private house the relative humidity can be maintained by the use of a steam kettle or by spraying the room frequently with warm water, or, if the floor material is suitable, by mopping the latter with a wet towel. The premature infant becomes dehydrated if the relative humidity of the room is allowed to fall below 30%, and this very quickly takes place if electric heaters are used in a badly ventilated room.

The use of suprarenal cortical hormone (both synthetic and/or the extract of the gland cortex) for the treatment of dehydration and for stimulating growth in premature infants has recently been reported upon favourably by some observers. We have used this substance in some cases, both to treat dehydration and to prevent it, but we have not found it of general benefit. It has proved of great value, however, in some cases of birth shock and in certain cases of dehydration, possibly those associated with a ketosis.

In spite of the use of the heated cots for external application of heat the temperature of premature infants fluctuates considerably in the first few days of life, and some of them cool down to an alarming degree within half an hour of birth. It is often very difficult to restore the temperature to normal by employment of the incubator cot alone, so recourse has to be had to some means of stimulating the infant's production of heat. The method we now use as a routine at the Rotunda Hospital is the administration of thyroid, which has proved most successful. The infant is given 1/4 gr. of thyroid (B & W) on admission, and 1/10 gr. twice daily for the next three to four weeks. We have found this hormone extremely useful in maintaining the body temperature and stimulating growth in premature infants.

Feeding

The digestive apparatus, even in the smallest premature infant, is reasonably well developed: most of the digestive ferments are present as early as the fourth foetal month, increasing gradually until the adult level is reached when the baby is 3 months old (Hess, 1923). The ideal food is breast milk, and every effort should be made to secure this. The mothers of such infants seldom, however, have enough milk until about the third or fourth day. In such circumstances, if possible, pooled breast milk should be obtained or a wet-nurse be engaged. In a great many cases it will be found impossible to obtain an adequate supply of breast milk, and artificial feeding will have to be resorted to.

At the Rotunda Hospital the smaller premature infants are usually fed two-hourly by day and three-hourly by night,

making a total of ten feeds in the twenty-four hours; the larger infants are fed three-hourly. Immediately on admission to the nursery the infants are given water 1/2 oz., glucose 1/2 drachm, and thyroid gr. 1/4. Feeding is started two hours later, except in the case of cyanosed infants and infants born of toxaemic mothers, who are kept on glucose-water for the first 12 hours. For the first three or four feeds the infants are given a weak mixture of milk and water (e.g., 1 part of milk and 2 parts of water), gradually increasing to a stronger mixture in two to three days. Breast milk is used when available, and by the end of the first week the infants are able to take this undiluted. When breast milk is not available, however, humanized dried milk or peptonized milk is substituted: these preparations are almost impossible to obtain at present, and we are now using half-cream "Cow & Gate," dried acid milk, or boiled cows' milk with equal success. Because of the low food value of weak milk mixtures they have to be reinforced by the addition of sugar (1 drachm to 2 oz. of the mixture). It is well known that premature infants take sugar with avidity during the early days of life, and it has been suggested that hypoglycaemia may be the cause of death in some of them, especially those weighing less than 3 lb. at birth. We have found, however, that they do not tolerate such a high percentage of sugar after two or three weeks, and the earliest clinical indication of carbohydrate intolerance is when the buttocks tend to get red. When this occurs sugar is cut down to about 1 drachm in 3 oz. of the mixture, and the protein content is correspondingly increased: this increase must, however, be very gradual, otherwise the infant will develop protein dyspepsia and start vomiting curds.

Our experience has been that infants weighing less than 4 lb. at birth or who have had a difficult delivery are seldom capable of sucking from the breast, and even when the milk is expressed are too weak to obtain an adequate supply from the bottle. Special teats, Breck feeders, pipettes, and spoon-feeding have been recommended for such infants; but these methods are unsatisfactory, as the feed tends to get into the larynx, causing coughing and choking. We now use gavage (tube feeding) for babies who are unable to suck easily. The pharyngeal reflex is imperfectly developed in these infants, so that the operation is carried out with the minimum of disturbance while they lie in their cots. When the infant starts to suck at the tube it is a sign that bottle-feeding may be gradually started. By this means we are able to avoid giving concentrated mixtures as advocated by some workers: these in our opinion are a potent cause of digestive disturbances. Instead of thickened feeds we give more feeds in the twenty-four hours—i.e., about 10 oz. to babies weighing 3 lb. or less, and about 15 oz. to babies over 4 lb. It is our experience that at this period of life the quantity of feeds is more important than the quality. By giving large quantities of fluid, in addition to keeping the infants in an optimum air condition, we have been able to reduce the initial weight loss to a considerable degree, and in some cases to eliminate it.

We have found it impossible to make an invariable rule for supplying the calorie requirements of our premature infants; some of them take as much as 45 to 50 calories per lb. body weight in the first twenty-four hours, while others will not; but none of these infants will gain weight after ten days on anything less than 60 calories per lb. body weight a day, and often we have to increase to 100 or more.

Vitamin Therapy.—Vitamin concentrates are administered to all our premature infants from a very early date. Vitamins A and D are added to the feeds in the form of adexolin from the second day of life. 3 minims daily is given at first, and this is gradually increased until 5 minims is being given by the end of the first month. Redoxon (vitamin C) 10 mg. daily is added to the feeds from the fourth week. Infants who have had a difficult delivery or who have haemorrhagic disease of the newborn are given vitamin K as a routine—0.5 to 1 c.cm. kapilon twice daily.

Nursing Technique

Of equal importance to feeding and other measures in the management of the premature infant is the nursing technique. In the Rotunda Hospital the following routine has been most successful. Immediately after birth the cord is ligatured and cut; the baby is cleansed with warm olive oil and wrapped in a warmed gamgee jacket of known weight. Recently, since olive oil can no longer be obtained, we have refrained from washing them altogether, leaving the vernix to fall off gradually. On admission to the nursery the baby is weighed and the rectal temperature taken. A dry dressing is applied to the cord, strict precautions being taken to prevent sepsis; the dressing is kept in place by a flannel abdominal binder. If the infant weighs under 4½ lb. its limbs are wrapped in cotton-wool; if under 4 lb. the head is also wrapped in cotton-wool. Glucose-water and thyroid gr. 1/4 are now given as already outlined; the baby's colour is most carefully observed and the rectal temperature taken again after two hours. If the general condition is not now satisfactory—i.e., if the baby is cyanosed or has birth shock—some form of stimulant is administered, such as nikethamide (coramine), rectal coffee-saline, or brandy. If the condition is satisfactory two-hourly feeding is begun. The baby is subsequently cleansed with olive oil once a day: the diapers are changed five times daily, when the baby is stimulated to induce crying in order to prevent atelectasis: at these times the genitals are cleansed with sterile water and the buttocks rubbed with a cream containing castor oil, zinc oxide, and tinct. benzoini co. The baby is turned on its side every four hours to prevent congestion of the lungs. A bi-daily temperature chart is kept and the baby weighed three times a week.

Infection

Infection is one of the commonest causes of death in the neonatal period. Newborn infants as a rule, and premature ones in particular, have but little power of resistance, and succumb very readily when infected. In an analysis of the causes of death of 101 premature infants in Edinburgh Maternity Hospital it was found that 43 of the deaths were due to infection (McNeil, 1940). Such a finding, however, is not confined to Edinburgh. It has been our experience on more than one occasion, and that of all other maternity hospitals of our acquaintance. The sources of these infections are as a rule:

(*a*) *Fingers of Attendants.*—Organisms are conveyed to the fingers from septic spots on the face or other parts of the body or from masks which have become infected; if the hands are not properly washed, contact with the premature infants implants the organisms on their delicate skin and gives rise to infection.

(*b*) *Improperly Sterilized Feeds and Teats.*—During the early days of life the contents of infants' intestines are sterile, and if their feeds are not thoroughly sterilized they tend to contract a sudden heavy infection with coliform organisms. These are absorbed not uncommonly into the circulation and are later excreted by the kidneys, giving rise to pyelitis and secondary enteritis in both male and female infants.

(*c*) *Droplet Infection.*—This is caused by attendants or visitors, with or without obvious respiratory infection, breathing over the infants; the commonest organisms thus spread are pneumococci, streptococci, and staphylococci.

Infection has been found our greatest difficulty in the Rotunda Hospital nurseries. Again and again it has appeared in spite of the most stringent regulations. During the present year we have had a persistent outbreak of enteritis. As well as enforcing the most stringent regulations regarding the sterilizing of feeds, bottles, etc., and washing of the nurses' hands, we do not now allow admissions from outside the hospital or infected cases from the puerperal wards even to the isolation wards in the nursery. No visitors or students are permitted entry to any of the infant wards. The nurses' nasopharynges are periodically examined and swabbed, and sterile masks are supplied in sufficient quantities to avoid their being worn when permeated by saliva, and the nurses are instructed never to touch them with their fingers once they are adjusted.

Discussion

There is no doubt that the measures necessary to reduce the death rate of premature infants are elaborate and complicated, but the results that may be obtained are so remarkable as to make them well worth while. In the past far too much publicity has been devoted to the maternal complications of obstetrics and far too little to those of the child. If the neonatal death rate is to be reduced, as can so easily be done, a new attitude to the whole subject is essential. A proper paediatric unit must be developed in every maternity hospital. There should be a maternity hospital in every region. For babies born outside the maternity hospitals, units of a similar nature

should be set up in all children's hospitals. It can be said that attempting to manage premature babies in the general wards of children's hospitals is almost waste of time, as they will tend to become infected and die.

We have dealt here with the management of the premature baby exclusively, and so far have said nothing in regard to the prevention of the condition. This is largely a social matter that can no longer be ignored. The maternity centre in New York has been able, by pre-natal care, to reduce the percentage of premature births by one-third. In a certain home for unmarried women in Oslo the proportion has been reduced to 2%, compared with 32% still prevailing among women of the same class attending the ordinary obstetrical clinic. Nutrition, sufficient rest, and relief from strain are the most important predisposing factors. In this connexion it is well to mention that cerebral haemorrhage is a common cause of death among premature babies, and recent work suggests that one of the reasons for this is lack of vitamin K in the mother's diet. Women suffering from even mild types of the toxaemias of pregnancy are usually placed upon deficiency diets. In the past obstetricians have often failed to recognize the importance of adding vitamin concentrates to these diets. In all such cases it is wise to give special injections of vitamin K.

Finally, we may sum up the position in regard to prematurity by saying that when a combined effort is made by the obstetrician and the paediatrician a considerable reduction will occur in its incidence and its death rate, and as a result we may expect a general improvement in the whole neonatal mortality.

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TREATMENT OF WOUNDS AND INFLAMMATION BY X RAYS AND RADIUM RAYS

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The use of *x* rays and other radiations in the treatment of wounds and inflammations has been much neglected. Dr. Leopold Freund of Vienna, who was the first to employ *x* rays for any form of therapy, used them for inflammations more than 40 years ago. One of us treated such cases as long as 36 years ago, and the other has done experimental research work on the basic principles underlying this treatment. The causes of this neglect are various. First, the indications for the treatment were so universal that it came to be looked at askance by the profession, who feared that it was a semi-quack treatment. Secondly, the discovery of the value of *x* rays and radium γ rays in malignant disease overshadowed their other uses. Thirdly, incorrect dosage was used in the earlier days. It was not until 1928 that it came to be universally realized that the doses previously given were too large and either produced inferior results or caused the late development of telangiectases and atrophy of the skin. Fourthly, it has been found that the action of ultra-violet and sunlight increases the liability to these late changes if larger doses have to be given, as in keloid. Finally, in the earlier days of the use of *x* rays the penetration, in treating deep-seated conditions, was much too low, so that the surface received an overdose and the deep part an underdose. Also, in those days accurate measurement of the dose, except that administered to the surface, was impossible.

With the very small doses now employed by some radiologists it is possible to carry on treatment, if necessary, for very long periods without the slightest risk of after-effects: this necessity, of course, arises only in the most chronic inflammations. Success has been obtained by ray therapy in such diverse conditions as carbuncle, erysipelas, suppurative parotitis, tuberculous glands, tuberculous peritonitis, actinomycosis, chilblains, whitlow, gas gangrene, osteomyelitis, and many others.

Basis of Treatment

In wounds there are two purposes to which irradiation can be put. One is the acceleration of the healing of clean wounds and the prevention of keloid; the other is to check the local inflammatory reaction, if there is no foreign body or sequestrum present. It does not matter whether the infection is acute, subacute, or chronic, except that one tends to use even smaller doses in acute cases. Experimental research work was done on the mode of action of small doses of *x* rays at the Holzknecht Institute in Vienna by one of us and by Shuichi Fukase. This gave the following results:

(1) Under treatment with small doses of *x* rays polymorphonuclear leucocytes in exudates break down more quickly than they usually do. Some think that this increased breakdown of polymorphs may be combined with the liberation of immune bodies and that the acceleration of healing is achieved by this means. (2) Wounds of the skin and of the cornea of animals heal sooner in the part treated locally by *x* rays. On the shaved skin of rabbits incisions were made about 12 cm.

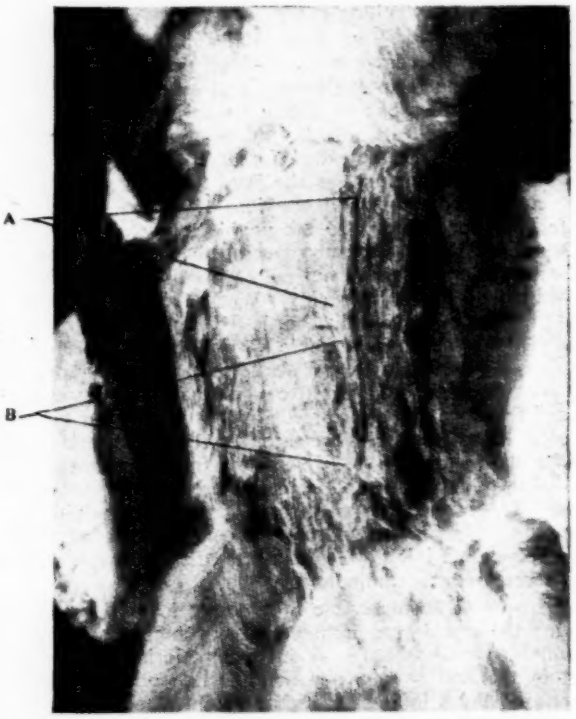
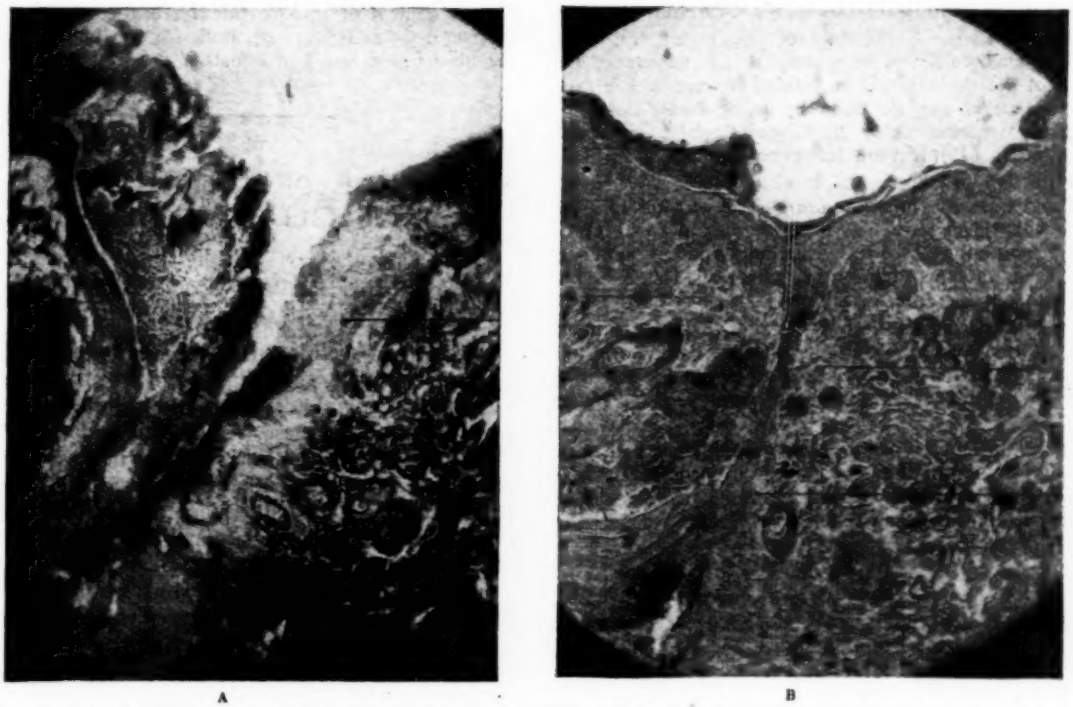


FIG. 1.—Cut in back of a rabbit 5 days after Section **A** had been irradiated. This section is firmly united, while Section B is still ununited.

long down to the superficial fascia. One half of the incision was covered with lead and the other half was treated by *x* rays immediately after the wound was inflicted. The wounds were left open and the animals kept in their usual surroundings. In that part treated by *x* rays hardly any exudate or other sign of cellular reaction occurred either as to the naked-eye or the microscopical appearance. The treated part of the wound was healed in 8 days as if it had been sewn up. The untreated part became infected and healed slowly by granulation. (Figs. 1 and 2.) Wounds of the cornea healed without surrounding inflammation on the side treated by *x* rays, but with marked infiltration on the side not treated. (3) Experimentally produced fractures of both fibulae of rabbits heal more quickly on the side treated with *x* rays. The callus on the irradiated side is less in quantity, is formed earlier, and is more heavily calcified. (4) After the inunction of tuberculin into the skin no reaction takes place in the part of the skin treated by *x* rays soon after the inunction. This shows the local effect of *x*-ray

treatment on the immunity reaction. The most striking result in all these experiments is the prevention of gross inflammatory reactions as seen both macroscopically and microscopically. Exudates are prevented and any inflammatory cells are rapidly changed to fibrocytes and fibrous tissues. This change, which always normally occurs in inflammatory reactions when sound natural healing takes place, can be induced and accelerated artificially by *small* doses of *x* rays. If *bigger* doses are used, doses of *x* rays mentioned. After a day or two the process of healing can be recognized by loss of pain; the exudation gradually subsides, frequently after a preliminary increase; the closure of the wound and the growth of the epithelium are both accelerated; callous chronic ulcers soon become covered with healthy granulations and heal. In fractures in which bony union has not occurred *x*-ray treatment induces



A B

FIG. 2.—(A) Untreated wound after 5 days shows no union. (B) Treated wound after 5 days shows firm union.

reversed effects and even necrosis occur, probably on account of the fact that inflamed tissues are much more radiosensitive than normal tissues. It seems to be of specific value in checking *local* inflammatory reactions which are of no further use in defence. Sometimes a mild infective agent will elicit abundant cellular reaction in the body and thus endanger life. In these cases irradiation is most useful by cutting short this inflammatory allergic reaction.

Indications for Use of Irradiation

Delay in Natural Healing.—Wounds of the surface which do not heal are quickly cured by treatment with the small quick calcification and bony union. Similar healing takes place in those haematomata which do not heal quickly—e.g., haematoma of the pinna of the ear.

Failure of Surgical or Medical Treatment.—In any inflammation where surgical or medical treatment fails, irradiation with small doses of *x* rays is indicated. As an example of failure of surgical treatment osteomyelitis following whitlow may be mentioned: loss of part of a finger, even in advanced cases, is generally unnecessary. With *x*-ray treatment we get regeneration of bone which is almost decalcified and destroyed by osteomyelitis (Figs. 3 and 4). Much disability in workmen, munition workers, men in the Forces, artists, housewives, and

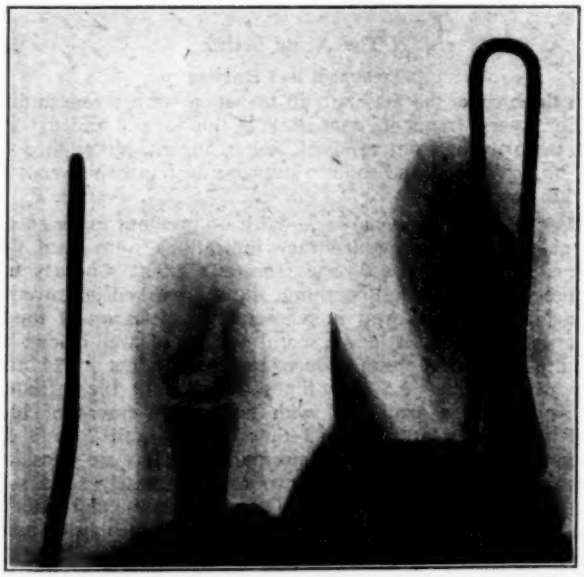


FIG. 3.—Whitlow before *x*-ray treatment. Amputation had been advised.

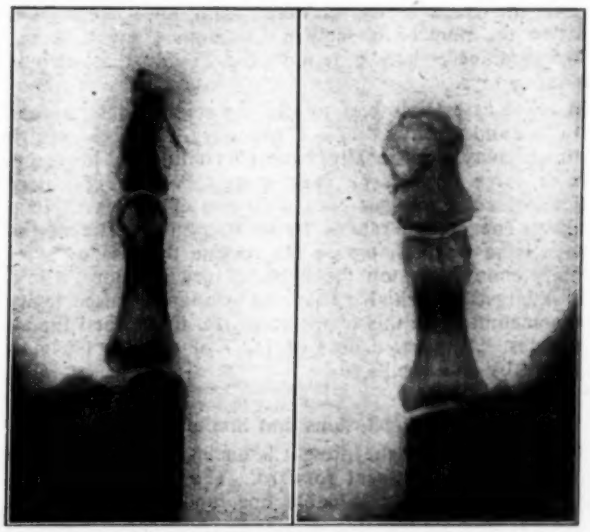


FIG. 4.—Whitlow 3 months after *x*-ray treatment was begun. Seven weekly doses of 100 *r* (surface) were given, and, later, two more doses of 100 *r*.

others is prevented. All other forms of osteomyelitis are indications for *x*-ray therapy combined with the necessary surgical treatment. Amputations with their consequent disability may be avoided. Great claims have been made in the United States for the use of this treatment in gas gangrene. Parenthetically, as an example of failure of medical treatment post-herpetic neuralgia may be mentioned. The treatment of the posterior root ganglia by *x* rays is followed by quick cure. Trigeminal neuralgia also responds to irradiation of the Gasserian ganglion.

Acute Inflammations.—Carbuncles of the upper lip, some forms of erysipelas, cellulitis, lymphangitis, gas gangrene, and osteomyelitis of the skull should be treated at once with *x* rays. No harm whatsoever can be done by using small doses on a limited field, whereas delay may sometimes prove fatal. In very few cases of infection, however, the treatment fails to improve the condition.

Subacute and Chronic Inflammations.—The number of these conditions is very large; we will instance only a few. Good examples are actinomycosis, local tuberculous infections as of lymph nodes or mucous membrane, chronic osteitis, septic fingers, and other local septic conditions.

Prevention of Disfigurement.—Scars are much better, thinner, and less obvious in wounds that are treated by *x* rays, and keloid will be prevented if irradiation takes place soon after trauma. This treatment is now often employed by plastic surgeons.

Social Indications and Wartime Purposes.—Delay in healing of all kinds of inflammation may be of importance from its economical or its wartime aspect. Healing can be much accelerated by irradiation and the period of incapacity therefore considerably shortened.

Dosage

The wave-length does not seem to be of great importance if the lesion receives the same biological dose. This is not the same thing as the physical dose, because a larger number of roentgens (*r*) have to be given if the wave-length is shorter, in order to produce the same biological result. Nevertheless, Fukase has shown experimentally that the shorter wave-lengths give better results. Grenz rays* are not sufficiently penetrative to give the requisite lesion dose.

The accurate modern methods of measurement enable us to calculate the dose received by the lesion whether it is superficial or deep. Though a very large dose is definitely harmful and the optimum dose is very small, there is considerable latitude. Thus, double the optimum dose will still give a good result, though not the best. The dose to be received by the lesion lies between 30 *r* and 80 *r*. The former dose may be applied twice a week and doses from 50 *r* upwards once a week. This dose presumes the use of *x* rays of about 140 kV constant current with a filter of Al 5 mm. With higher voltage and filtrations the number of *r* must be larger to give the same biological dose; with lower voltages and filtration the number is smaller. Radium γ rays filtered by Pt 0.5 mm. necessitate a lesion dose double that used with medium *x* rays.

In acute cases it is best to use the smaller dose, repeating in 3 days, and again in 4 days if necessary. With chronic cases treatment may occasionally have to continue a long time—two or three months or even more. A case of extensive abdominal actinomycosis even took one of us a year to cure finally. The dosage rate is 10 to 80 *r*/min. The necessary dosage is so small that even the routine fluoroscopy is occasionally enough to stop the inflammatory reaction. Children with enlarged bronchial glands and constantly raised temperature sometimes lose this temperature rise if screened for about 5 minutes. A repeated dose of 150 *r* or more is likely to be followed by bad results.

Conclusions and Summary

Owing to the war the present is an important time to bring this method of treatment forward. The use of radiations in these cases is a very valuable one, and will without doubt much increase in the future, when experience has confirmed the good results, which cannot be achieved by any other means.

The treatment of acute, subacute, and chronic inflammations by small doses of *x* rays is described, as well as the experimental and research work on which this treatment is based. The accelerated healing of wounds and fractures by irradiation is also described. The effect of *x* rays is due to the influence on local cellular reaction and local immunity. The reasons for the neglect of this treatment are gone into. The necessity for small doses is stressed, both for the better results and for the absence of late bad effects.

* *X* rays of very long wave-length on the border (Grenze) of the ultra-violet.

THE USE OF SULPHAGUANIDINE IN BACILLARY DYSENTERY

BY

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The cases surveyed in this paper were selected for treatment from 600 patients suffering from bacillary dysentery admitted to a general hospital in the Middle East over a period of 8 months. Of these, 77 were treated with sulphaguanidine. Its use was authorized only in severe or refractory cases. Hence the acute cases described represent those which from general experience of dysentery could not be expected to do well on standard treatment, and the chronic cases those which had already failed when so treated. There was occasionally a temporary shortage of supply, but every effort was made to give what was considered to be an adequate course of the drug. Sulphaguanidine consists of sulphanilamide in which one of the hydrogen atoms of the amino group is replaced by a guanidine ring, and is thus homologous with sulphathiazole and sulphapyridine. Experimental investigation has shown that sulphaguanidine, although water-soluble, is poorly absorbed by the intestinal mucous membrane. This would allow large concentrations to be maintained in the gut, with only a low tissue fluid and blood concentration resulting, and a correspondingly slight danger of toxic poisoning from large or prolonged dosage.

Of the 77 cases 26 were classed as acute and 51 as chronic. This differentiation was based mainly on the day of disease, and all cases giving a history of less than 2 weeks from the onset were considered acute. Duration of symptoms in the cases termed chronic varied from over 2 weeks to many months.

The Acute Series

Treatment and Routine

In these cases the malaise and toxaemia were severe and the motions very frequent, consisting of blood and mucus only. The majority had not received any treatment, although a few had had castor oil and sodium sulphate during their evacuation to this hospital.

Dosage of Sulphaguanidine.—With no previous experience as a guide the following arbitrary indications were used as a means of gauging the dosage required: 3.5 g. 4-hourly until (*a*) the patient's general condition showed marked improvement as evidenced by a drop in temperature, clean moist tongue, absence of toxaemia, and general feeling of well-being; and (*b*) the stools had been reduced to five or less in 24 hours and were faecal. 3.5 g. 4 times a day until the infrequent stools became a semi-solid with only slight traces of blood and mucus present. 3.5 g. 3 times a day until 2 or 3 days after the stools had become normal. Stools were considered normal when not more than two solid or nearly solid stools without blood were passed in a day. No particular attention was paid to a small excess of mucus, which was almost invariably present. In the early cases treated this latter part of the plan was not strictly adhered to and sulphaguanidine was stopped on the day the stools were free from blood.

On admission the patient was generally somewhat collapsed. He was put to bed, rested and warmed, and his clinical condition observed for the first few hours. During this time the frequency and character of stools were noted and specimens sent to the laboratory for plating and microscopy. Treatment with sulphaguanidine was started with an initial dose of 7 g. in the form of a powder stirred up in 2 oz. of water. In very severe cases this was followed by 3.5 g. in 2 hours, and again after 2 more hours. Otherwise the 3.5-g. doses were repeated at 4-hourly intervals. The diet was limited to fluids for the first 24 hours of treatment, after which mashed potatoes, fish, chicken, junket, and bread-and-butter were gradually added until on the third or fourth day the patient was receiving a full diet. No difficulty was encountered in getting patients to eat, as the desire for food returned almost invariably in the first 48 hours. Every effort was made to encourage a large fluid intake by mouth in the early stages to replace fluid loss. In no case was intravenous fluid found to be necessary.

The following adjuvant treatment was carried out: (1) In the case of Shiga infections, 30,000 units of antiserum; (2) mist. bismuth. c creta, 1 oz. every hour, in the initial stages of treatment to aid in reducing the frequency of the bowel motions; (3) tinct. opii in 10-minim doses, or occasionally 1/4 gr. of morphine, to relieve abdominal pain.

Sigmoidoscopy was carried out during the week after treatment, and subsequently if a normal mucosa was not seen the first time. Sigmoidoscopy as a routine measure before treatment did not seem justifiable. The rectum was, however, examined in a few cases, and showed a typical picture of sloughs separating to leave intensely congested and bleeding surfaces with varying oedema and induration. In acute cases the general condition and a stool examination would seem to be an adequate means of assessing the intensity of the infective process. The urine was tested daily and a blood count done at completion of treatment.

TABLE I.—*Acute Cases*

No. of Case	Clinical Nature	Day of Disease	Bacteriology	No. Days Treatment	Total Dosage (g.)	Day of Marked General Improv.	Day Stools Faecal	Day No Abdom. Tender	Day No Abdom. Pain	Day Stools Normal	Remarks and Sigmoidoscopic Findings
13	Very severe	6	Shiga	17	266	10	10	10	9	14	Healed
10	,,	10	,,	11	199	7	5	7	7	9	,,
12	,,	12	,,	13	192·5	6	7	6	4	11	,,
20	,,	6	,,	11	171·5	4	7	4	4	8	,,
17	,,	3	,,	12	161	9	6	5	3	10	,,
21	,,	4	,,	10	154	4	5	5	6	8	,,
18	,,	10	,,	10	150	5	8	7	3	8	,,
6	,,	5	,,	11	143·5	3	5	5	5	9	,,
8	Severe	2	,,	9	133	2	3	3	3	7	,,
15	,,	8	,,	10	133	4	5	4	2	8	,,
9	,,	12	,,	9	117	3	4	4	2	8	,,
26	,,	7	,,	9	108·5	4	3	4	2	7	,,
7	,,	12	Flexner	9	136	4	4	4	3	8	,,
22	,,	8	,,	8	98·5	3	3	4	4	6	,,
24	,,	10	,,	7	98	2	2	4	4	5	,,
11	,,	1	,,	7	91	2	2	3	3	5	,,
14	,,	2	,,	7	91	2	3	3	3	5	,,
19	,,	12	Not identified	7	112	4	4	4	3	6	,,
25	,,	7	,,	7	98	3	2	3	4	4	,,
23	Very severe	10	Shiga	20	350	—	always faecal	—	—	—	Mucosa remained injected and oedematous (catarrhal). See case notes
16	,,	4	,,	7	136	5	5	6	3	7	Mucosa showed marked induration and oedema with ulceration
4	Severe	9	,,	7	101	4	3	6	3	7	Hyperaemic granular mucosa in patches and loose faecal stools with blood after a few days. Degrees of induration and oedema of bowel wall, with occasional bleeding ulceration
3	,,	3	,,	7	101	3	3	4	4	7	
2	,,	4	Flexner	5	60	5	3	4	4	–	
1	,,	5	Not identified	5	77	2	4	3	3	5	
5	,,	10	,,	8	123	4	4	5	5	7	

Out of a total of 26 acute cases treated 16 were Shiga, 6 Flexner, and 4 undetermined culturally but having a typical bacillary exudate in the faeces. Table I gives the cases in descending order of dosage and grouped according to cultural findings, except that those not completely cured and not showing a healed mucosa on sigmoidoscopy are grouped at the bottom. The cases are classed as severe or very severe according to their clinical condition on admission to hospital.

Cases Completely Cured.—Of the 26 cases 19 were cured, of which 11 were severe and 8 very severe. Table II shows the days on which recovery from symptoms occurred.

TABLE II.—*Showing Days of Recovery from Symptoms*

	Severe Cases (11)	Very Severe Cases (8) (All Shiga)
Average total dose	110 g. over 9 days	180 g. over 12 days
Marked general improvement	2 to 4 days	3 to 10 days
Stools became faecal	2 to 5 days	5 to 10 days
No abdominal tenderness	3 to 5 days	4 to 10 days
No abdominal colic	2 to 4 days	3 to 9 days
Normal stools	5 to 8 days	8 to 14 days

It is interesting to note the quick response to treatment of Cases 11 and 14 (Table I), both of which were severe Flexner infections treated on the first and the second day of onset respectively. Treatment lasted a week, with a total dosage of 91 g., and in spite of the severity of the infection stools were formed, and without blood, on the fifth day, the patient being discharged from hospital in full health 14 days from the onset of disease.

Cases Not Completely Cured.—These cases numbered 7—5 severe and 2 very severe. In the severe cases the average total dose was only 90 g. over 6 days and the response of symptoms to treatment occurred as in the cured cases. Sulphaguanidine was stopped on the day stools became normal. These cases continued to improve for a few days and then suffered a relapse, although not of a very acute nature. Stools became loose, 4 to 10 daily, with blood and mucus. There was some return of colic and abdominal tenderness. In all cases sigmoidoscopy showed moderate hyperaemia and granulation of the mucosa, accompanied by a variable degree of oedema, induration, and bleeding from actual induration. Subsequent treatment with colonic wash-outs produced complete healing in from 2 to 4 weeks. As both the very severe cases were Shiga infections they are here described separately:

Case 16.—Sulphaguanidine was stopped owing to a shortage of supply after 136 g. had been given over 7 days. The response to treatment was quite satisfactory, with the disappearance of symptoms and the return of faeces to the stools. The latter, however, still contained mucus with very slight traces of blood the day treatment had to be suspended. No further improvement was seen and the case became chronic, with up to 6 loose stools daily containing blood and mucus. Shiga's bacillus was again isolated from the stools, and sigmoidoscopy showed much induration and oedema of the bowel wall, with a coarsely granular hyperaemic surface, nodular in places and covered by muco-pus which was expressed from pockets by passage of the instrument. Colonic wash-outs effected a temporary improvement only, and after 5 weeks a further course of sulphaguanidine—175 g. over 10 days—was given. Subsequent sigmoidoscopy revealed a healed mucosa.

Case 23 showed an initial response which was not sustained: although blood disappeared on the sixth day the stools remained as frequent as 20 or more a day. Malaise and toxaemia, with abdominal colic and tenderness, were marked. Sulphaguanidine was continued until 350 g. had been given over 20 days, but without improvement in the patient's condition. Repeated sigmoidoscopy showed an oedematous and injected mucosa without ulceration. Shiga's bacillus was again isolated after 100 g. of sulphaguanidine had been given.

Case Reports (Acute Cases)

Case 10.—This is an example of the very severe cases that were cured. Dec. 1: Gradual onset of symptoms; no treatment was received, and the condition had steadily increased in severity until admission to hospital on Dec. 11. Admitted very weak, pale, exhausted, and in a collapsed condition. Temperature 97.4°; pulse 120; abdominal pain very severe. Stools showed almost continual passage of blood and mucus. Morphine 1/4 gr. was given; hot blankets, water-bottles, etc. Some hours later temperature was 102° and pulse 110; treatment with

sulphaguanidine was begun. Treatment of the case continued as follows:

Day of Dis.	P.M. Temp. & Pulse	General Condition	Stools		Abdom. Tender	Colic	Sulphaguanidine
			No.	Nature			
10	102°/110	As above	+++	B. & M. only +++	+++	+++	7 g. stat. 3·5 g. after 2 hrs. + 3·5 g. ditto
11	101°/90	Slight improv.	20	B. & M. only ++	+++	++	3·5 g. ×6
12	100°/90	I.S.Q.	8	B. & M. only ++	++	++	3·5 g. ×6
13	99·2°/90	,,	+6	B. & M. only ++	++	++	3·5 g. ×6
14	99·4°/90	,,	+6	B. & M. only ++	+	++	3·5 g. ×6
15	99·2°/85	Still much malaise and toxaemia	+4	Slightly faecal, mostly B. & M. only +. 3 faecal B.++ M.++	Slight	+	3·5 g. ×6
16	99°/85	,, ,,	4	1 B. & M. only	Slight	+	3·5 g. ×6
17	N.	Marked improv.	3	Semi-solid. B. & M. ++	0	0	3·5 g. ×4
18	N.	Improv. contd.	2	Semi-solid. M. ++	0	0	3·5 g. ×4
19	N.	,,	1	,, ,,	0	0	3·5 g. ×3
20	N.	,,	1	Solid. Slight M.	0	0	3·5 g. ×3

Adjuvant treatment was as follows: 10th day—morphine gr. 1/4×2; anti-Shiga serum, 30,000 units; mist. bism. cret., 1 oz. q.h. 11th to 14th days—mist bism., tinct. opii ♏ 10×4. Adjuvants were then stopped.

The stools remained normal except for a slight excess of mucus, and sigmoidoscopy showed a healed mucosa with an occasional submucous haemorrhage. The urine was normal throughout. A final blood count after treatment showed: Hb 96%, R.B.C. 4,910,000, W.B.C. 5,300, with normal differential count.

Case 11.—This case illustrates the quick response to early treatment in comparison with Case 10. In the early morning of Sept. 28 the patient was taken with sudden diarrhoea and abdominal colic, blood appearing in the stools after a few hours. Marked vomiting and tenesmus were present. Sixteen hours after onset admitted to hospital collapsed, with severe abdominal colic. Tongue furred and dry; abdomen showing marked tenderness; stools slightly faecal, with much blood and mucus. The severity of the symptoms suggested a Shiga infection, and 30,000 units of antiserum were given, although the report received 2 days later indicated a typical Flexner bacillus.

Day of Dis.	P.M. Temp. & Pulse	General Condition	Stools		Abdom. Tender	Colic	Sulphaguanidine
			No.	Nature			
1	101°/100	As above	+15	First faecal, becoming B. & M. only	+++	+++	7 g. stat.
2	99·4°/80	Marked improv. at end of day	+5	Occ. faecal. B. & M. only ++	++	++	3·5 g. ×6
3	N.	—	3	Fluid. Faecal. B. + M. +	0	0	3·5 g. ×6
4	N.	—	3	Semi-solid. M.+	0	0	3·5 g. ×4
5	N.	—	1	,, ,,	0	0	3·5 g. ×4

Adjuvant treatment given was: 1st day—morphine gr. 1/4, mist. bism. cret. 1 oz.; antiserum 30,000 units q.h.; 2nd day—tinct. opii ♏ 10×2.

The stools remained normal and sigmoidoscopy showed a healed mucosa. Urine normal. Blood count normal.

The Chronic Series

These patients had been suffering from chronic dysentery for from a few weeks to many months, and all had received various periods of routine treatments.

Dosage.—Indications as to dosage were again purely arbitrary and, as in the acute series, the nature of the stools passed was taken as a guide, sulphaguanidine being continued until 2 days after the stools had become normal. Of 20 cases so treated, 9 were not cured. In these, symptoms returned and sigmoidoscopy showed that although the stools were microscopically normal the mucosa had not healed. It was evident that this plan of dosage, although satisfactory in acute cases, when used in the chronic cases resulted in too small a total dosage and too short a period of treatment. Accordingly a new scheme was adopted whereby all the cases were treated for a minimum of 8 days, 3.5 g. of sulphaguanidine being given at 4-hourly intervals, omitting the 2 a.m. dose. The total daily dose was therefore 17.5 g. The number of days under treatment was increased in cases of more than average severity, where such was indicated by the degree of toxaemia of the patient, sigmoidoscopic appearances, and length of illness.

Treatment and Routine

Preliminary to Sulphaguanidine.—Most cases gave a history of previous treatment with sodium sulphate and fluid diet. Cases 6, 23, 25, 26, and 51 had received from 30 to 80 g. of sulphaguanidine in the acute phase (i.e., during their evacuation), but treatment had not been continued until the stools were normal. 19 cases received a period of treatment (after admission here) with colonic wash-outs while on a low-residue diet. Sigmoidoscopy sometimes showed temporary improvement, but complete healing did not take place.

With Sulphaguanidine.—During the first few days the patient's general condition was observed, nature of stools noted, and sigmoidoscopy carried out, material being removed for microscopical examination and plating. The sigmoidoscopic appearances are illustrated in case notes given below. Diet was the same as in the acute cases. The urine was tested daily, and a blood count done at the end of treatment.

Description of Chronic Cases

Of the 51 chronic cases treated, 20 were Shiga infections, 14 Flexner, and 17 unidentified. They are described in two groups: Group A, in which the original plan of dosage was used, and Group B, in which the modified plan was used. Table IV shows both groups in descending order of dosage.

Group A.—This consisted of the first 20 cases treated, and the average total dose was 90 g. over 6 days. All responded to treatment, and in from 3 to 6 days the stools had become normal, abdominal tenderness and colic had disappeared, and the patients' general condition had greatly improved. Yet only 11 (55%) cases showed complete healing on sigmoidoscopy. In the other 9 granular hyperaemic areas with some induration and oedema remained. There was some return of symptoms, and complete healing took several weeks, during which period the patients remained on a low-residue diet and received daily colonic wash-outs.

Group B.—This series consisted of the subsequent 31 cases, and the average total dose was 160 g. over 10 days. Symptoms responded to treatment as in Group A, but the final results were much better in that 24 (77%) cases showed complete healing on sigmoidoscopy and 5 complete healing except for granular hyperaemic patches limited to the lower part of the rectum. These had disappeared after one week's treatment with rectal wash-outs, during which time the patient was given liquid paraffin to soften the stools. Two cases (Nos. 33 and 45) which appeared to respond quite well suffered a subacute relapse when treatment was suspended. Sigmoidoscopy showed a return of ulceration on an oedematous indurated hyperaemic mucosa. Treatment with colonic wash-outs was tried again, but the lesions did not heal completely. A further course of sulphaguanidine—189 g. and 175 g. respectively—resulted in cure.

Table III (including both groups) shows the average day, the earliest day, and the latest day on which recovery occurred.

TABLE III

	Average Day	Earliest Day	Latest Day
Marked general improvement	3rd	2nd	7th
No abdominal tenderness ..	4th	3rd	7th
No abdominal colic	4th	2nd	9th
Normal stools	4th	3rd	10th

Case Reports (Chronic Cases)

Case 13.—This case was from Group A and was treated according to the original scheme of dosage without complete cure. In the acute phase of an attack of dysentery in Sept., 1941, after 4 months in the Middle East, the routine saline treatment was given for 10 days with improvement, but the stools never became normal. When admitted here a month later (Oct. 3) he was pale, thin, and toxic, with temperature 99° to 100° and pulse 80 to 110. There was marked tenderness over sigmoid, ascending colon, and caecum. The stools, about four daily, contained much bloody mucus. Sigmoidoscopy showed numerous irregular ulcers with overhanging edges covered by yellowish muco-pus, which on removal left a bleeding granular floor. Some ulcers had become confluent, and the intervening mucosa was granular, slightly indurated, and oedematous. The exudate was bacillary in type, but culture from swabs proved negative. From Oct. 17 to 27 treatment was carried out with colonic irrigation. The patient's condition would improve for a few days and then relapse. Stools continued to contain blood and mucus. Sigmoidoscopy now showed much increase in the oedema and induration of the bowel wall, and instrumentation was impossible beyond 10 cm. The ulcers had not healed. Culture from a swab again proved negative. Therapy with sulphaguanidine was started on Nov. 3, and was continued as follows, 70 g. in all being given:

Day of Dis.	P.M. Temp. & Pulse	General Condition	Stools		Abdom. Tender	Colic	Sulphaguanidine
			No.	Nature			
52	100°/90	As above	4	S-S. B. + M. ++	+	+	7 g. stat. +3·5 g. ×2
53	99°/90		1	S-S. B + M. ++	+	0	3·5 g. ×5
54	98·4°/90	Slight improv.	0	—	+	0	3·5 g. ×4
55	N./85	Marked improv.	0	—	0	0	3·5 g. ×4
56	N./N.	Improv. contd.	1	S. M.	0	0	3·5 g. ×3

After a few days stools were again loose, with occasional blood-streaked mucus. Sigmoidoscopy showed a great improvement, but indurated, oedematous, bleeding granular areas remained. From Nov. 13 to 28 treatment was continued by colonic irrigation, and sigmoidoscopy one week later showed a healed mucosa.

Case 28.—This was a severe case from Group B, and was treated according to the revised scheme, with complete cure. At the onset of an acute attack of Shiga dysentery in Nov., 1941, after 3 months in the Middle East, routine saline treatment was given with initial improvement but subsequent acute relapse; on Dec. 1, when admitted here, saline treatment was repeated, and was followed by colonic irrigation. On Dec. 28, 2 months after the onset, stools were about 5 daily, and contained much blood-stained mucus; chronic toxaemia was gradually worsening the patient's condition. Sigmoidoscopy showed numerous irregular-shaped ulcers covered with blood-stained muco-pus. The rest of the mucosa was granular and haemorrhagic, and in some places nodular. Pus was expressed from between the nodules by the passage of the instrument. Oedema and induration of the bowel wall became so great that instrumentation was impossible beyond 12 cm. Treatment with sulphaguanidine was started on Dec. 29—the 55th day of disease—and continued as follows (total dosage, 175 g.):

Day of Dis.	P.M. Temp. & Pulse	General Condition	Stools		Abdom. Tender	Colic	Sulphaguanidine
			No.	Nature			
55	99·8°/90	As above	5	S-S. B. + M. +++	++	+	7 g.+3·5 g.×3
56	99·8°/90		2	S-S. B. + M ++	+	+	3·5 g. ×5
57	99·2°/90		1	S-S. B. M. ++	+	Occ.	3·5 g. ×5
58	N./90	Marked improv.	2	S-S. M. +	+	Occ.	3·5 g. ×5
59	N./85	Improv. contd.	1	S. M. +	0	0	3·5 g. ×5
60	N./N.	,,	2	S-S.	0	0	3·5 g. ×5
61	N./N.	,,	1	S.	0	0	3·5 g. ×5
62	N./N.	,,	1	S.	0	0	3·5 g. ×5
63	N./N.	,,	1	S.	0	0	3·5 g. ×5
64	N./N.	,,	1	S.	0	0	3·5 g. ×5

Stools remained normal, and sigmoidoscopy one week after treatment showed a completely healed mucosa.

Case 47.—A moderate case from Group B showing complete healing but some residual proctitis. At the onset of an acute attack of dysentery on Dec. 4 routine saline treatment was given. Admitted here on Dec. 14 much improved, but still with loose faecal stools containing blood and mucus. Sigmoidoscopy showed a granular hyperaemic mucosa, covered by blood-stained muco-pus, with moderate oedema and induration of the bowel wall. Culture was negative. From Dec. 20 to 30 colonic irrigation and low-residue diet. On Jan. 6 stools were still loose, with blood and mucus. Sigmoidoscopy showed no healing. Treatment with sulphaguanidine was started on Jan. 7—the 33rd day of disease—and was continued as shown, the total amount given being 140 g.:

Day of Dis.	P.M. Temp. & Pulse	General Condition	Stools		Abdom. Tender	Colic	Sulphaguanidine
			No.	Nature			
33	99·2°/85	Malaise and toxaemia +	3	S-S. B. + M. +	+	+	7 g. + 3·5 g. ×3
34	98·6°/N.	,, ,,	0	—	+	+	3·5 g. ×5
35	N./N.	Marked improv.	1	S. M. +	0	0	3·5 g. ×5
36	N./N.	,, ,,	0	—	0	0	3·5 g. ×5
37	N./N.	Improv. contd.	0	—	0	0	3·5 g. ×5
38	N./N.	Slight toxic effects here—malaise, anorexia, erythema [N.B. Bowels confined]	1	S. M. +	0	0	3·5 g. ×5
39	N./N.	—	1	S.	0	0	3·5 g. ×5
40	N./N.	Rash gone. [N.B. Bowels open]	2	S-S. M.	0	0	3·5 g. ×5
41	N./N.		2	S-S.	0	0	3·5 g. ×5

Sigmoidoscopy showed a healed mucosa except for hyperaemic granular patches with slight oedema and induration in the rectum. Stools were loose for 4 to 5 days, with flecks of blood-stained mucus. Treatment was continued with rectal wash-outs and liquid paraffin for 10 days. On Jan. 27 sigmoidoscopy showed the rectal lesions to have healed, and stools were quite normal, with patient fit and well.

TABLE IV.—*Chronic Cases*

Case	Previous Treatment	Day of Disease	Bacteriology	No. Days Treated	Total Dosage SG	Day of Marked General Improv.	Day No Abdom. Tender.	Day No Abdom. Colic	Day No Stools	Sigmoidoscopic Findings and Results One Week after Treatment
GROUP A										
15	S	24	Flexner	9	126	4	4	4	6	Healed
1	S	21	,, 1	7	98	4	4	4	3	Improved after treat. CI
11	S	42	,,	6	91	3	3	3	4	Healed. Sequel: tachycardia
17	S	30	,,	6	84	3	3	3	3	Healed
8	S	22	,,	5	73	3	3	3	3	,,
6	S SG 30 g.	31	,,	5	70	3	3	3	3	Improved after treat. CI
3	S	30	,, II	5	66·5	3	3	2	3	Healed
4	S	25	Shiga	8	101·5	5	5	3	7	Improved after treat. CI
5	S	26	,,	6	77	3	3	3	3	Healed
10	S	24	,,	5	63	3	3	2	4	Improved after treat. CI
7	S CI	37	Unidentified	6	91·5	3	3	3	3	Healed
12	S	?	,,	6	87	4	4	2	3	,,
19	S	34	,,	6	80·5	3	3	—	3	,,
2	S	16	,,	5	80·5	2	3	3	4	Improved after treat. CI
9	S	31	,,	5	77	3	3	3	4	Healed
16	S	21	,,	6	77	3	3	3	2	,,
13	S CI	52	,,	5	70	3	3	2	4	Improved after treat. CI
20	S CI	30	,,	5	70	3	3	2	3	,, ,,
18	S CI	21	,,	5	63	3	3	2	2	,, ,,
14	S CI	32	,,	4	53	3	3	3	4	Slightly imp.*
GROUP B										
51	S SG 50 g.	39	Shiga	12	224	4	9	9	9	Healed
45	S CI Re-treated	39	,,	12	210	—	9	9	4	Subacute relapse
				10	175	7	5	8	4	Improved and finally healed
31	S	30	,,	13	206·5	7	7	5	3	Healed
24	S SG 50 g.	21	,,	12	191	7	6	9	10	Healed but for rectal patches
22	S CI SG 50 g.	—	,,	11	183·5	5	5	5	5	,, ,,
26	S	31	,,	10	175	3	4	4	2	,, ,,
27	S	—	,,	10	175	6	7	5	6	,, ,,
28	S	50	,,	10	175	4	5	5	4	Healed
37	S CI	—	,,	10	175	4	4	4	4	,,
38	S	43	,,	10	175	4	4	4	4	,,
39	S	41	,,	10	175	4	3	3	5	,,
41	S	67	,,	10	175	6	6	6	7	,,
42	S	38	,,	10	175	4	4	5	6	,,
46	S	23	,,	10	175	5	5	5	6	,,
49	S CI	50	,,	10	175	5	4	4	4	,,
34	S	40	,,	9	157·5	3	3	2	6	,,
48	S CI	70	,,	8	140	3	3	3	5	,,
30	?	—	Flexner	9	151·5	3	3	3	3	,,
21	S	18	,,	9	143·5	4	4	2	4	,,
25	S SG 82 g.	38	,,	8	143·5	4	4	4	4	,,
23	S CI	24	,,	8	140	3	4	4	4	,,
29	S CI	21	,,	8	140	4	4	2	4	,,
32	S CI	39	,,	8	131	3	3	3	3	,,
43	S CI	66	,,	8	130	3	3	3	3	,,
36	—	—	Unidentified	10	175	4	3	4	4	,,
50	S	25	,,	10	175	6	6	2	5	,,
35	S CI	—	,,	9	157·5	3	3	2	4	,,
40	S CI	46	,,	8	140	3	3	3	3	,,
47	S CI	23	,,	8	140	3	3	3	3	Healed but for rectal patches
44	S CI	63	,,	8	130	5	3	3	4	Healed
33	S CI	33	,,	6	108	4	4	3	4	Subacute relapse*
	Re-treated after 3 weeks			11	189	3	3	5	4	Healed

* Supply of sulphaguanidine ran short.
S=Saline. CI=Colonic irrigation. SG=Sulphaguanidine.

Toxicity of Sulphaguanidine in Chronic Series

Toxic symptoms were rare, occurring in only 9 patients out of 51 chronic cases treated. (No toxic symptoms occurred in the acute cases.) They comprised rashes, nausea, headache, tachycardia, and fever (see Table V). It will be seen that in all but 2 cases a dose of at least 100 g. had been given, and it was noted that all patients with toxic symptoms were relatively constipated—i.e., one stool in 2 or 3 days. It is therefore reasonable to assume that the concentration of sulphaguanidine in the bowel was unusually high and that this may have led to increased absorption into the blood stream.

TABLE V.—*Toxic Symptoms*

Case	Day of Treatment	Dosage Given (g.)	Symptoms	
			Duration	Nature
51	12th	224	3 days	Macular red rash on trunk; headache and tachycardia
34	9th	157·5	2 ,,	Slight fever; tachycardia; headache; nausea
23	8th	140	2 ,,	,, ,, ,, ,,
29	8th	140	2 ,,	,, ,, ,, ,,
46	8th	140	4 ,,	Maculo-papular rash; headache; nausea
48	7th	122·5	3 ,,	Generalized erythema; headache; slight fever
47	6th	105	3 ,,	,, ,, ,, ,,
19	2 days after	80·5	4 ,,	Maculo-papular red rash
6	4th	4	2 ,,	Slight fever; headache; nausea

Conclusions

Acute Cases

In all, 26 acute cases of bacillary dysentery were treated with sulphaguanidine. 19 cases were completely cured in from 14 to 21 days; 6 cases relieved, 1 of which became chronic; and 1 case hardly affected. The chronic case was subsequently cured by further treatment with sulphaguanidine.

Sulphaguanidine, like other sulphonamides, would appear to be bacteriostatic, the dysentery bacilli dying only slowly. Hence an efficient concentration of the drug must be maintained for some time after the active infective process has been inhibited. Such a stage is evidently reached when the stools are almost normal, and the failure to continue the sulphaguanidine makes a relapse likely. Cases 1, 2, 3, 4, and 5 were the first treated, and sulphaguanidine was stopped when the faecal stools had a consistency and showed no blood. The fact that these cases relapsed after a few days would appear to stress the importance of continuing treatment for 2 to 3 days after the stools are normal and while the final stages of healing are taking place. Further evidence in support of this is given by Cases 6, 23, 25, 26, and 51 of the chronic series, which received up to 80 g. in the acute phase but subsequently became chronic. Treatment had not been continued until the stools were normal.

The early acute infections showed a very quick response to treatment, and the longer the interval between the onset of the disease and the beginning of treatment, the longer was treatment necessary.

The more frequent and looser the stools the less the concentration of sulphaguanidine in the bowel (*Trop. Dis. Bull.*, 1942, **39**, 34), and in the initial stages of treatment adjuvants such as tinct. opii, bismuth and chalk, and kaolin were used to lessen the frequency and increase the consistency. In the one case which failed to respond the stools remained fluid and frequent in spite of all treatment.

The feeling of well-being as toxaemia is overcome and the early fall in the frequency of the stools greatly reduced the exhaustion and dehydration of the patient. Fluid can be made up adequately by mouth, and the patient's early desire for food as his condition quickly improves allows his strength to be built up while the infective process is overcome.

Chronic Cases

A series of 51 cases of chronic bacillary dysentery were treated with sulphaguanidine. All showed an early and marked response to treatment. In the first 20 cases, as in the acute series, the nature of the stools governed the dosage given, and the average total dose was about 90 g. over 6 days. Only 11 (55%) cases were completely healed, without relapse. In the subsequent 31 cases a minimum dosage of 17.5 g. for 8 days was given, and the advent of normal stools was not taken as an indication for reducing or stopping treatment. The average total dose was 160 g. over 10 days. 24 (77%) cases showed complete healing, and 5 complete healing but for granular patches in the rectum; 2 responded but relapsed after treatment.

Stool examination and the general examination of the patient are inadequate as a means of gauging the state of the lesions in the bowel, and sigmoidoscopy is essential. It would seem that passage of normal stools and disappearance of symptoms in chronic cases indicate only that the active infective process has been inhibited and not that healing of the mucosa has taken place. If sulphaguanidine is not continued the infective process may again become active, delaying healing for some weeks. A full daily dose of 17.5 g. for at least 8 days, and longer in cases showing other than moderate severity, would appear to afford adequate protection against this delay in healing. Nine cases of the chronic series showed mild toxic symptoms from the sulphaguanidine.

Summary

In all, 77 cases of bacillary dysentery were treated—26 acute, 51 chronic. Of the 26 acute cases 16 were Shiga infections, 6 Flexner, and 4 unidentified. Of the 51 chronic cases 20 were Shiga and 14 Flexner infections; in 17 the organism was undetermined.

Patients were put to bed, rested and warmed. The frequency and character of stools were noted, and specimens plated and examined microscopically. Diet was limited to fluid in the first 24 hours. A large fluid intake by mouth was encouraged in the early stages to replace fluid loss. No intravenous fluid was necessary.

Adjuvant treatment was given, cases of Shiga infection receiving 30,000 units of antiserum.

Acute cases received an initial dose of 7 g. of sulphaguanidine, followed by 3.5 g. at 4-hourly intervals. In very severe cases 3.5 g. was given 2 hours after the initial dose, followed in 2 hours by a further 3.5 g. In the main, sulphaguanidine was given until 2 days after the stools had become normal.

Chronic cases received 17.5 g. of sulphaguanidine daily, in 5 doses, for a minimum of 8 days, the length of treatment being increased in the severer cases. A preliminary period of treatment with colonic wash-outs while on a low-residue diet was carried out in 19 cases.

In chronic cases sulphaguanidine must be given until healing of the mucosa has taken place: to gauge this, sigmoidoscopy is essential.

Complete cure was obtained in 19 (73%) acute cases, in 11 (55%) chronic cases receiving 90 g. over 6 days, and in 24 (77%) chronic cases receiving an average dose of 160 g. over 10 days.

Toxic symptoms occurred in only 9 of the 51 chronic cases; there were none in the acute series.

Illustrative cases, showing the scheme of treatment, are recorded.

PROBABLE TETANUS DESPITE INOCULATION WITH TOXOID

BY

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Preliminary reports upon battle casualties previously protected with tetanus toxoid seem to vindicate both its use and the administration of two doses at a six-weekly interval. In the B.E.F. in France and Flanders no tetanus occurred in the wounded who had been so inoculated (Perry, 1940), and the third dose after a six-months interval, which is now the standard method advocated by Boyd (1938) and in practice in the British and Indian Armies, should further raise the antitoxin level. The following is a probable case in a subject who had been protected by two doses at a six-weekly interval.

Case History

A sepoy aged 20 received 1 c.cm. of tetanus toxoid subcutaneously on April 25, 1941, and again on June 7 (as recorded in his pay-book). He was admitted to this hospital on Dec. 4 with a history of stiffness in the dorsal thoracic muscles and the muscles of the back of the neck for two days. Slight stiffness of the jaws and dysphagia appeared first on the day of admission. His only injuries were a wound on the left thenar eminence and one on the palmar surface of the left middle finger, each about 3/4 in. long, incised, superficial, and at the time of admission quite healed, with only the edges of the most superficial horny layer very slightly gaping. He had received them on Nov. 18 while serving on the Red Sea Littoral.

Moderate risus sardonicus and trismus were present, the jaws opening 1/2 in. There was marked stiffness of the back and neck. One could just pass the flat of the hand between the

shoulders and the bed. The abdominal muscles were rigid, but moved with respiration. Spontaneous paroxysms of opisthotonos were occurring about every half-minute; they lasted about 5 seconds, and were accompanied by clenching of the jaws and spasm of the thoracic and abdominal muscles. The limbs were unaffected. These paroxysms had first appeared on the night of Dec. 3. He was quite rational, but his face bore an appearance of intense anxiety. The only findings of note in the C.N.S. were loss of plantar reflexes (a usual finding in the sepoy in health and disease) and a complete absence of abdominal reflexes. The pupils were moderately small, and reacted normally to light.

The patient had received 15,000 units of A.T.S. (therapeutic) in his unit on the previous day, and 15 c.cm. intravenously and 5 c.cm. subcutaneously with adrenaline and calcium lactate in a reception station earlier on the day of admission. (There he had also undergone lumbar puncture, the fluid revealing no abnormality of pressure or constituent.) In this hospital he was given 40,000 units (therapeutic) intramuscularly b.d., and was kept stuporous with 4 drachms of paraldehyde by mouth, the paraldehyde being repeated in 2-drachm doses when necessary, day and night.

On the morning of Dec. 5 his temperature was 99.4°, pulse 90, and respirations 20, and his condition was unchanged. On the 6th the spasms were of 5 seconds' duration as before, but occurred only every 2 minutes, and their severity was much less marked. The neck rigidity and trismus were unchanged, and the morning temperature was 100°. Treatment was repeated. Early on the morning of the 7th he suddenly died. The temperature had just been taken—99°.

Necropsy.—The examination was made by Capt. A. E. Wilkinson, R.A.M.C., about 6 hours after death. There were two small completely healed wounds on the left hand; rigor was noticeably more pronounced in this hand than in the right, but was absent in both arms. The right ventricle and auricle were engorged with fluid blood, while the left heart was comparatively empty. Numerous petechial haemorrhages were present in the epicardium over both auricles and ventricles. The posterior cusp of the pulmonary valve was ruptured at its free border. The remaining valves were normal, the coronaries were patent, and the cardiac muscle appeared excellent. The lungs were pale and emphysematous, with no subpleural haemorrhages; the liver was very dark and congested; the kidneys were congested; and the brain was normal. There was a pronounced smell of paraldehyde, most noticeable in the lungs, liver, and brain. The remaining viscera appeared to be normal. The tissue from the healed wounds was not cultured for *Cl. tetani.*

Differential Diagnosis.—The diagnosis was not confirmed bacteriologically, hence the doubt expressed in the caption of this article. The other possibilities were rabies and strychnine poisoning. As regards rabies, points of similarity were the spasms and rising temperature, but the respiratory rate was only slightly increased and there was no manifestation of air hunger. The larynx was involved in the spasms, but between them speech was normal. Similarly, fluids were taken freely by mouth between the spasms. There was no hydrophobia or hypersalivation. The trismus, risus sardonicus, and constant neck and back rigidity were distinguishing features, and the incubation period of 14 days agrees with a diagnosis of tetanus arising from such a wound in the hand. Strychnine poisoning is excluded by the duration of illness (5 days) and the persisting trismus and neck and back rigidity. Poisoning by brucine has been suggested, but since this drug is similar in action to strychnine but is only slightly toxic (Lynch and Pryce, 1939), it also is excluded. Furthermore, I have been unable to find any evidence of the use of poison on arrow tips or otherwise by the natives of this district. There was no history of an arrow wound.

Comment

No other case of tetanus has been reported in this area during the eight months of British occupation. The country is dry, sandy, hot, and arid, and tetanus is rare in such soils (Boyd, 1939). However, the Italians left the site of occupation in a filthy condition, and there had been much recent contamination of the soil by horse, mule, and donkey manure. No A.T.S. had been given at the time of the injuries, the patient considering them too trivial to report. At the post-mortem examination the pronounced rigidity of the left hand was a noticeable feature. The atmospheric temperature was similar to that of a fine English spring day, and could not have appreciably accelerated the onset of rigor mortis. There was no factor in the environment which might have allowed one part to cool more quickly than another.

The man was not seen by me just before he died, so the severity of the spasms then occurring cannot be stated accurately. The nursing sepoy attending him reported that they seemed less severe than on the previous day, and that he had his back to the patient at the moment of death. The rupture of the pulmonary valve cusp was mute evidence of the immediate cause of death. It is extremely rare for a pulmonary valve cusp to rupture as a result of violent physical exertion, and there was no congenital defect in the cusp to weaken it. Death must have occurred in diastole. One can imagine that the severe respiratory effort with closed glottis forced blood out of the alveolar walls, and that the tension within the pulmonary artery was further increased by the general intrathoracic pressure's acting on its outer surface until a cusp ruptured. The emphysema in one so young is confirmatory evidence of the high pressure in the thorax at the time of death. Despite the improvement after his admission to hospital and until the moment of death, the ultimately fatal issue agrees with Cole's gloomy prognosis (Cole, 1941) in cases in which spasm begins within 48 hours of the onset of trismus.

It is admitted that tetanus usually arises from unhealed wounds or disturbed scars, but it does occur where no obvious wound can be found (the so-called "idiopathic" cases). The mere fact that the wounds in the left hand were healed does not invalidate the diagnosis.

If this was undoubtedly a case of tetanus the two protective inoculations had not even sensitized the reticulo-endothelial system, and the stimulus of toxin from the wound produced no rise of antitoxin to "the highly protective level," which has been suggested as 0.01 international unit per c.cm. (*British Medical Journal*, 1940, **2**, 910). It would be similar to a persistently Schick-fast reactor. Marvell and Parish (1940) report that 26 out of 27 subjects reacted satisfactorily to the third dose of tetanus toxoid, and that the remaining titre rose from 0.05 to 0.05–0.1 unit. This, in conjunction with Perry's report, is an indication of the rarity of the case recorded above.

The occurrence of such a case vindicates the present practice of giving antitoxin to all wounded, irrespective of previous inoculation with toxoid.

I am greatly indebted to Col. J. S. K. Boyd for his criticism of this paper and personal communications upon it. I wish to thank Capt. A. E. Wilkinson, R.A.M.C., for performing and reporting upon the necropsy; Capt. G. J. H. Maud, I.M.S., Lieut.-Col. E. Oastler, R.A.M.C., and Major H. Fidler, R.A.M.C., for their criticism and advice; and the D.M.S., Middle East Forces, for his permission to publish.

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Medical Memoranda

A Case of Acute Aseptic Meningitis

Acute aseptic meningitis was first described as a separate disease by Wallgren (1925). Since then numerous cases have been reported, though the cause remains obscure. It is distinct aetiologically from the virus form of lymphocytic choriomeningitis. It is often referred to as benign aseptic meningitis. The term "benign" is accurate as regards prognosis, for all cases recover; but if applied to symptoms it may be misleading, as in the present case, in which the illness was so severe that I did not at first think it could possibly be what I had always known as benign aseptic meningitis.

CASE HISTORY

I saw the patient, a girl aged 5, at her home on June 17, 1942. Two days before, she had returned from school feeling sick and complaining of sore throat: three days previously she had been perfectly fit. She had had a convulsion on the morning of the 17th. She had moderate neck rigidity and a doubtful positive Kernig's sign. I admitted her as a probable case of meningococcal meningitis. On admission, lumbar puncture yielded a clear fluid under greatly increased pressure. The pupils were widely dilated and fixed: no reaction to light. Knee- and ankle-jerks were absent, as were all arm-jerks; plantars were extensor. The child resented all examination. Shortly after the lumbar puncture she had twitchings of the right side of face and body, which later spread to the left

and became violent. These violent choreiform movements continued all afternoon and most of the night, and the child became desperately ill. On the assumption that this was a case of poliomyelitis, though a very unusual one, she was given 20 c.cm. of human serum intramuscularly. The following morning the movements were less pronounced, but the child was semi-comatose, with marked head retraction; her limbs were all held flexed, and it was difficult to extend them. An obvious left facial paralysis and slight left foot-drop were present, and there was some difficulty in swallowing, but the palate moved freely. She was given 20 c.cm. of poliomyelitis horse serum intravenously and 20 c.cm. intramuscularly. The facial paralysis had largely disappeared within a few hours, and by June 19 was scarcely appreciable. The foot-drop had also almost gone and there was no difficulty in swallowing. The child remained semi-conscious, with marked head retraction and fixed flexion of all limbs. The most likely diagnosis at this stage seemed to be tuberculous meningitis. On the 20th, however, there was a distinct improvement in the child's condition, and by June 22 she appeared almost normal. She was discharged on July 8, and has been seen several times since, quite fit. The following investigations were carried out:

Lumbar Puncture	Appearance of Fluid	No. and Type of Cells	Protein (mg./100 c.cm.)	Chlorides (mg./100 c.cm.)	Culture
17/6/42	Clear	380 { Lymphocytes, 55% Polymorphs, 40% Large hyalines, 5%	40	640*	Sterile
18/6/42	,,	320. Lymphocytes, 96%	20	720	,,
20/6/42	,,	410. Lymphocytes, 94%	20	700	,,
2/7/42	,,	90 { Lymphocytes, 80% Polymorphs, 20%	20	730	,,

* This figure was reported as "not guaranteed" the following day: it obviously supported a diagnosis of tuberculous meningitis.

Radiographs showed no skull abnormality and the lungs were clear. Animal inoculation revealed no signs of virus infection from inoculation with patient's serum or cerebrospinal fluid (June 20). Complement-fixation and neutralization tests were both negative on the patient's serum on August 17.

COMMENT

Points of interest are: (1) the extreme severity of the symptoms, the term "benign" being rather misleading; (2) the absence of a preceding febrile illness (in the virus form, a febrile illness of one or two weeks' duration is frequently, though not always, recorded); and (3) the very transient paralyses. The last two points are well discussed by Baird and Rivers (1938). Diagnosis from tuberculous meningitis could be made only as signs of recovery became apparent. The wild choreiform movements followed by fixed flexion of the limbs were unlike poliomyelitis, though the absence of tendon-jerks was in its favour on the first day; failure to develop any flaccidity or marked paralysis in a case in which the central nervous system was so acutely involved, and a high cell count a fortnight after the onset, suffice to exclude it.

I am greatly indebted to Dr. MacCallum of the Wellcome Research Foundation, who carried out the animal inoculation and serological tests; to Dr. May of the Emergency Pathological Service, who reported on the cerebrospinal fluid; to Dr. Sleigh Johnson, who saw the case in consultation; and to the medical officer of health, Southend-on-Sea, for permission to publish.

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Thrombophlebitis of the Cavernous Sinus: Recovery

The following case of cavernous sinus thrombosis, which recovered after a combined treatment with blood transfusions and sulphathiazole, may be considered worthy of record.

CASE HISTORY

On May 25, 1942, I was consulted by a vigorous, healthy married woman, aged 56, about a nasal furuncle situated inside the left alar cartilage. It was a typical staphylococcal lesion, not of large size, and there was the usual oedematous swelling of the adjacent cheek, with intense pain and slight pyrexia. I treated her from the outset with 1 tablet (0.5 g.) of sulphathiazole (M & B 760) four-hourly, and advised glycerin packs for the interior of the nose. Next day I was sent for and found a good deal more swelling of the cheek, with oedema of the lower eyelid and temperature 101°. Pus was being discharged from the furuncle. She also complained of severe supra-orbital headache, but it was not till the following day that I suspected the possibility of cavernous sinus thrombosis. On May 28 there was no longer any doubt: the left eye was proptosed, both lids being greatly swollen, and chemosis was present; the right eye was also involved, but not to the same extent. Frontal headache was very severe, and oedema extended over the supra-orbital region, more pronounced on the left side. Detailed examination of the eyes was difficult, but the patient volunteered the information that she "saw double on looking to the left," and there appeared to be definite paresis of the left external rectus—from involvement of the sixth nerve, which runs along the inner wall of the cavernous sinus. There was some rigidity of the neck muscles, and temperature had risen to 103°. The patient was seen with me by Mr. C. Gill-Carey and removed to hospital.

A blood count showed R.B.C. 4,740,000 and W.B.C. 10,200 per c.mm. A blood culture was also taken that night (from which, after five days' incubation, a *Staphylococcus aureus* was grown of the same type as that found in the nasal lesion). Immediate treatment given was a transfusion with 400 c.cm. of whole stored blood (freshly taken that day), and intramuscular injection of sulphathiazole was started, alternating with oral administration of the drug—4 g. of each within the first 24 hours. The local condition was rather worse next day, proptosis and chemosis being more noticeable; but the temperature fell gradually to normal within two days, and the general condition was obviously better. The same dosage of sulphathiazole was continued for three days, when it was reduced to 6 g., but next day the temperature began to rise, and 8 g. was again given. On June 2 there was a sharp rise of temperature to 102°, so a second transfusion of stored blood was given, once more with good effect, the temperature falling to normal next day and remaining normal for four days. There was a great improvement in the patient's condition, general and local, except for the appearance on June 6 of a papular rash on the neck, arms, legs, and abdomen. As she was complaining of a good deal of nausea the sulphathiazole was reduced to 3 g. daily on June 6 and 7.

On the 7th, however, she felt very ill, with sudden rise of temperature to 102°. Again 400 c.cm. of whole blood was given, and sulphathiazole 6 g. daily. The dramatic improvement, however, was not repeated this time, so on the 9th 400 c.cm. of blood from a donor was administered. A blood count taken at the time showed W.B.C. 7,800 per c.mm., with no sign of agranulocytosis, so the dosage of sulphathiazole was stepped up to 8 g. daily. For the next four days the patient remained very ill, the rash extending into large confluent areas, and headache being severe: but the local condition of the eyes showed marked improvement. On June 13, as the rash was so distressing, and the patient had by then had 95 g. of sulphathiazole, it was decided to discontinue it. Next day the temperature remained normal for the first time for a week; the rash gradually faded and the swollen eyelids returned to normal fairly rapidly. Headache, though still severe at times, became spasmodic in character, and convalescence began.

DISCUSSION

Thrombophlebitis of the cavernous sinus is a grave complication of suppurative lesions of the face; the mortality has been notoriously high, and all the textbooks which I consulted record that it is "almost invariably fatal." In the *Lancet* for May 2, 1931, W. G. Scott-Brown, in a comprehensive review of six fatal cases collected from the records of St. Bartholomew's Hospital, alludes to it as "an invariably fatal complication of minor facial sepsis, unless the sinus can be drained." He goes on to describe the methods of approach to the sinus: (1) the Gasserian-ganglion route; (2) the orbital route; (3) the nasal route, through the sphenoidal air sinus. But each of these represents a surgical manœuvre fraught with the gravest peril of injury to important structures and of spreading the disease to the meninges. Bischer reported in 1893 a successful case of drainage through the petrous portion of the temporal bone (Scott-Brown), but his success has apparently never been repeated.

With regard to surgical treatment of the local lesion, it is generally recognized that free incision is dangerous and apt to lead to rapid dissemination of the infection. It is therefore gratifying to feel that methods of treatment exist to-day which give a good chance of recovery. I cannot say whether the repeated blood transfusions or the sulphathiazole therapy played the greater part in curing the condition, but I feel sure that the combination of the two was the important thing. A study of the temperature chart did make it appear that the fresh antibodies provided by transfusion caused dramatic improvement on the first two occasions, and, though the temperature persisted after the third and fourth transfusions, I am inclined to think that the patient had by then had as much sulphathiazole as she could deal with. The rash was very severe, and it seems likely that the drug itself may have been responsible for keeping the temperature up at this stage, the sudden cessation of fever on discontinuing it pointing strongly in that direction.

The case has, to my mind, proved conclusively the great value of sulphathiazole in the treatment of serious staphylococcal infections, and bears out the claim of the makers that its toxicity is only half that of sulphapyridine. Before the appearance of the toxic rash my patient had had about 60 g. of the drug, and she was able to take in all 95 g. in 18 days, without serious detriment.

I am indebted to Dr. Frank Knott, pathologist to Guy's Hospital, and to Dr. J. Verdon, R.M.O. at Surbiton Hospital, for their invaluable help in treating this interesting case.

A. R. C. DOORLY, M.B., B.S.

THE MEASURE OF NIGHT VISION

BY

N. BISHOP HARMAN, M.B., F.R.C.S.

It is agreed by all that in these days there should be some assortment of men and women for the various kinds of night duty according to their ability to see in a minimum of outdoor light. Those on such duty who are good observers discover for themselves some measure of their night-light reaction. An officer of the Home Guard told me that when he went out from his house at night he could see little at first, but he knew his road and walked slowly; in five minutes he could see so well that he could distinguish the white patches of road markings. There is no doubt of the truth of this observation. When I go out into the dark after an evening of reading and look at the roof of a near-by cottage it appears to have no chimney on its ridge, the skyline seems unbroken; but on looking at the gable end of the roof three metres away the missing chimney can be seen. After staying out of doors for from 5 to 10 minutes the chimney can be seen by direct fixation. The macula has recovered its full vision.

Defect of Some Night-vision Tests

There are several tests of night vision. Some are distinctly ingenious; but with some—and to my mind this is the most important point—there is no definite measure of the minimum light necessary for vision in the particular subject who is tested. Such a measure should undoubtedly be given by a direct reference to our scientific standard of candle-power, and it should be ascertained in such a way and by such an instrument and recorded in such terms that it can be obtained by any ophthalmic surgeon anywhere—here in England or far away in Australia—by repeating the same process. All our eye work is done so far as possible according to definite measurement. We agree everywhere to the measurement of Snellen's distant daylight vision test; and the figures of that test carry with them an exact appreciation of the vision of the person examined. When a workman's compensation case is under consideration in a law court the statement of the medical witness that the subject's normal eye sees 6/6 and the injured eye 6/18 conveys a direct and fair impression to the minds of the judge and the lawyers. Some definite measure and figure of night vision are equally desirable. In an article in the *Journal* on wartime street lighting[1] this was clearly stated: "The measure of illumination provided by wartime street lighting, though so small, is of appreciable benefit, especially when applied on a wide scale."

A number of night-vision tests are now available. The earliest of them measured the time required by the individual to attain an adaptation to the dark. From one point of view, that of the general health and nutrition of the subject, this time reaction is valuable. But among subjects of equally good health and nutrition these adaptation tests do not give a direct and definite measure of the minimum light required by the individual to see an object or objects. An early test for the measure of night vision was that of Dr. W. D. Wright.[2] His test cards were black with a letter **C** thereon in varying shades—from pure white to dark grey. The cards were exposed to a radium glow, and examined at a distance of 12 inches. The test is simple, but it gives no definite measure of the light, for radium glow varies. Major B. W. Rycroft[3] has reversed this test for Army use, and based his instrument on a widely used form of Snellen's test. The test mark is the letter **V** painted in varying positions on transparent screens, which are illuminated from behind by an electric bulb. The test is attractive and easy to use, but again there is no definite measure of the lighting, so that the results are not exactly comparable. Opal glass varies in its filtration of light (so even does plate glass!) and electric bulbs vary in their reaction. So far as I can judge the response to this test is wholly related to the particular instrument in use at the time, and it does not give a light measure that can be obtained by anyone, anywhere, and at any time.

1 *British Medical Journal*, 1941, **1**, 635.
2 Harman, N. Bishop, ibid., p. 636.
3 Rycroft, B. W., ibid., 1942, **2**, 576.

The Disk-spotting Test

The disk-spotting test[4] is planned on a direct measurement of light. The light is reflected from illuminated disks on a black velvet background, and the measure is gained by finding the distance at which the disks can be seen and counted. An instrument made by Theodore Hamblin is most convenient to use, but the plan of the test is so simple that it can be set up by anyone anywhere. Further, since the illumination is from "the standard candle," which is well known to all testers of lighting and all students of physics, there can be such an exactness of the light used and of its measurement that the returns of the examination are definite. The figures were given of night-vision reactions in some 700 healthy subjects with full daylight distance vision grouped as follows: (1) school children 10 to 18 years; (2) soldiers 19 to 30 years; (3) soldiers 31 to 40 years; and (4) persons over 41 years. The reactions differed slightly with age: children did the test best and subjects in group (4) least well. But there is a common average for all classes and ages which the figures showed to be 5. At a distance of 5 metres the light is only 1/1075 of a foot-candle; at 1 metre the light is 1/373, and at the greatest distance at which the disks can be counted, 8 metres, the light is only 1/1816 of a foot-candle, or 1/2000 allowing for reflection loss.

A question put to me by a colleague is one of importance. He said: "I know what is meant when the night-light reaction with this test is only 2 metres, but it would be well if there were some means of registering the reaction to this test that would be recognizable and understandable by any intelligent layman, even though he has no knowledge of how the test is made." There is, I think, a means of registering these night-vision reactions to the disk-spotting test that will meet this need. Here are the percentages of the reactions of the 700 persons examined (half-metre positions have been omitted).

Metres distant	2	3	4	5	6	7	8
% average reaction	5	12	16	21	15	4	1

The figures make it evident that night vision at 5 metres, or in light of 1/1075 candle-power, is the average for most people. If this figure 5 be taken as the denominator of a vulgar fraction of which the numerator is the reaction of the particular individual, that vulgar fraction will state the facts of the finding of the test in such fashion that any person will understand it—just as that person understands something of what 6/18 on Snellen's test implies as a fractional quantity of distant daylight vision. Returns of the disk-spotting night-vision test would be thus: 2/5, 3/5, 4/5, 5/5, 6/5, 7/5, 8/5. If, after testing a subject in this manner, the figure registered is night vision 5/5, everyone will know it is normal. If the figure is 2/5 all will know that night vision is poor; if it is 8/5 no one will doubt that it is very good.

My only criticism of such "fractional" figure returns is that they do not, and cannot, show the amazing value of the high returns. The fractions from 2/5 to 4/5 are a fair statement of the condition of the patient's night vision; but the fractions 6/5, 7/5, and 8/5 seem insufficient for the splendid condition of seeing at 6 or 7 or 8 metres. I have no doubt that in these latter cases the examiner would add a note that "the subject's night vision is exceptionally good," and the reader or examiner of the recorded returns would be duly impressed.

4 Harman, N. Bishop, *British Medical Journal*, 1941, **2**, 347.

Griffiths, Marks, and Young have shown that the implantation of various oestrogens for periods of two to four weeks increases the insulin content of rat pancreas. H. L. Fraenkel-Conrat and his colleagues (*Proc. Soc. exp. Biol.*, N.Y., 1941, **48**, 333) confirm their observation, and believe that the effect is brought about through the mediation of the pituitary. They found that oestrogen which raises the insulin content in the pancreas of normal rats fails to do this in hypophysectomized rats. Also, implantation of the pituitaries of oestrinized rats increased the insulin content of the pancreas of the host animals, an effect not observed with implantation of pituitaries of untreated rats.

Reviews

PATHOGENESIS OF POLIOMYELITIS

Neural Mechanisms in Poliomyelitis. By Howard A. Howe, M.D., and David Bodian, Ph.D., M.D. (Pp. 234. $3.50 or 20s.) New York: The Commonwealth Fund; London: Oxford University Press. 1942.

This well-written and well-illustrated book describes the experimental work carried out by the authors to throw light upon the pathogenesis of poliomyelitis. The extent of current researches upon virus diseases is illustrated by the fact that this book contains some 200 references to this aspect of one virus infection alone. The question investigated is important because measures for the prevention of poliomyelitis can be based only upon knowledge of the mode of infection with the causative virus and the nature of the immunity which protects against a second attack. Howe and Bodian's researches suggest that the olfactory tract is probably not the usual route of infection in man, but that the virus multiplies in the alimentary canal, from which it passes to the central nervous system by ascending the axis cylinders of nerves which have not yet been identified. Within the nervous system the virus spreads along nerve paths, but there are great variations in the susceptibility of different centres. The total pathological picture is thus determined by at least three principal factors: the portal of entry, the selective spread from the region of the nervous system first invaded, and the susceptibility of the centres reached by the virus. There is evidence that immunity is not a reaction of the nervous system but is the result of protection at the portal of entry. Many problems remain unsolved, but this book is an encouraging account of steady progress made towards the eradication of this scourge of childhood.

SPECTROSCOPY OF VITAMINS AND HORMONES

The Application of Absorption Spectra to the Study of Vitamins, Hormones and Coenzymes. By R. A. Morton, D.Sc., Ph.D., F.I.C. Second edition. (Pp. 226. 28s. 6d. post free inland.) London: Adam Hilger, Ltd.

The great advance in the technique and applications of spectroscopy during the last ten years has made it imperative that Dr. Morton's book should be completely rewritten and enlarged. Spectroscopy has become widely used not only for detecting the presence of many substances but also for determining them quantitatively in many media. In particular the estimation of certain vitamins and hormones has been much simplified by this branch of physical chemistry. Full details of the procedures and precautions necessary for such determinations are given in the second edition of Dr. Morton's book. In addition he has also given a satisfying account of the theory underlying the technique. The substances to which the science of spectroscopy has been most usefully applied are the steroids (provitamins D and vitamins D, oestrogens, follicular hormones, male hormones, etc.), the carotenoids and vitamin A (with a full examination of the conversion factor for changing intensity of absorption at 325 mμ into international units of biological activity, and the conclusion that one molecule of carotene yields only one molecule of vitamin A), vitamin E and antioxidants, vitamin K, vitamins C and P, the vitamin B complex (a pity that pantothenic acid was omitted from the summary on page 140), purine and pyrimidine derivatives, proteins, enzymes and coenzymes. The physiological aspects of these substances are treated shortly but adequately to interest the pure spectroscopist. The book contains both name and subject indexes. The diagrams, plates, and whole format of the book are excellent.

DEVELOPMENT OF THE CEREBRAL CORTEX

The Postnatal Development of the Human Cerebral Cortex. By J. LeRoy Conel. Volume II: The Cortex of the One-month Infant. (Pp. 144; 108 plates. $8.00 or 46s. 6d.) Cambridge, Massachusetts: Harvard University Press; London: Oxford University Press. 1941.

The second volume of this work by Prof. J. LeRoy Conel has now been published, and it maintains the high standard of the first volume, which deals with the cortex of the newborn infant. Precisely the same procedures have been adopted, so that the two series of observations can be compared side by side—namely, the cortex of the newborn babe with that of a one-month infant. Some results of these observations, which indicate the number and measurements in μ of the cells in each unit and the width of the laminae in the various areas of the isocortex, have been tabulated, so that changes in the different areas of the isocortex that take place during a given period of development may be compared, and, with the photomicrographs and camera-lucida drawings of individual neurons in each area, be used as a standard for comparison of the normal structure of the cortex at the ages investigated, when dealing with physiological problems or morbid material. Later stages in the growth and differentiation of the cortex are to be described in subsequent issues of the series. The procedures adopted in the preparation of the sections comprise staining with cresyl-violet, Cajal, Golgi-Cox, and Weigert methods; and the criteria used in studying the development of the cortex include size of cell bodies; chromophil substance; neurofibrils; size and length of cell processes; branching of axons, spines, thorns, and varicosities; size and number of exogenous fibres; and myelination.

One specific purpose which the author has had in planning this and subsequent instalments of his work is the observation and record of those changes that occur during the growth and differentiation of the cortex which are correlated with the development of the progressive phases of behaviour in growing children. During the first month of post-natal life definite advances, although as yet slight, have been greatest in the growth of those parts of the cortex which are associated with movements of the hands, and the co-ordinated movements of the eyes which are necessary for binocular and stereoscopic vision. We note also that, while in the one-month infant the greatest advance in the growth of cell processes, Nissl bodies, and neurofibrils is in the large pyramidal cells of layer V of the posterior part of G. frontalis medius, the functional area for contralateral movements of the eyeball, the posterior region (pars opercularis) of G. frontalis, Broca's area for speech, shows little advance. The receptive area of the parietal lobe and the "striate area" of the occipital lobe have advanced in development to a greater degree than the acoustic or hippocampal areas, in which progress is only slight. It will be interesting to learn from the later volumes of this work whether in the period corresponding to increased growth of the legs, and the use of the lower limbs in walking, there will be a corresponding change in the motor cortex of the leg area, and also whether there will be a perceptible advance in the development of the acoustic and Broca's areas, preceding or at the time when the child learns to speak.

Notes on Books

A fourth edition has now reached this country of Dr. MALFORD W. THEWLIS'S book, *The Care of the Aged* (*Geriatrics*) (Henry Kimpton; 35s.). The third edition was noticed in these columns as recently as April 4, 1942, when we commended it as a book of reference relating to old age and its diseases which might well find a place on the shelves of all general physicians. The text has been revised and additional matter included. The importance of the subject continues to grow because of the great shift in living population of the United States and of this country. The latest census figures show that there are nearly nine million persons in the U.S.A. over 65 years of age—an increase of 35% for this age group since 1930, while the total population increased by no more than 7.2%.

The ninety-ninth edition of the *Medical Directory* has been published by Messrs. J. and A. Churchill, Ltd. It appears in the same form as last year and at the same price. There has been a net increase of 1,346 entries, and the number of pages of text has been increased by thirty-two. The numerical summary of the medical profession shows that there are now 66,740 names, compared with 65,394 in 1942. Increases will be found in all but one of the sections of the *Directory*: 24 in London, 719 under Provinces, 114 under Abroad, 380 under Scotland, 179 under Ireland, and 2 under Wales. A decrease of 72 is recorded under Services. The figures do not include 1,632 temporarily registered practitioners whose names, addresses, and qualifications are listed in a short section near the end of the volume. The publishers are to be congratulated on keeping this valuable book of reference up to its usual high standard.

Dorothy Gill (*Arch. Pediat.*, 1942, **52**, 587) has collected 36 cases of nephritis following varicella, including one of her own in a boy aged 5½. The ages ranged from 6 months to 11 years. Of the 26 cases in which the sex was mentioned, 10 were males and 16 females. The interval between the eruption and the onset of nephritis varied from 1 to 24 days. Seven of the cases were fatal.

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TREATMENT OF CANCER OF THE LARYNX

The curative or radical treatment of malignant tumours must at present take the form of either excision or irradiation, and as the surgery of malignant disease has always been from its very nature fraught with disaster and disappointment, however great its positive achievements in various directions, the hopes aroused by the claims of radiotherapy have produced a swing towards this treatment even for operable cases of cancer. It is this group of cases, which might have been successfully treated by excision, that have provided radiotherapy with almost the whole of its good results, though it has had some success in inoperable cases. This, however, has eventually proved nearly always to be palliative only.

As the two forms of treatment follow quite different routes, and attempts to combine them have led nowhere, it is very difficult, and perhaps impossible, to obtain an unbiased judgment on their respective merits. To gain the experience and skill required in order to obtain the best results in any group of cases much patience and long years of training are necessary, whether it be in surgery or in radiotherapy, and this must induce some bias, however resolutely the tendency be resisted. It is an odd coincidence that the most determined attacks have been made by radiotherapy on regions usually in the province of specialists where the results of excision have been fairly good, while regions which fall to the general surgeons have been relatively neglected. Thus the uterus, larynx, and pharynx are favourite fields for radiotherapy, though excision has much to offer, whereas the stomach, colon, rectum, and breast are less subjected to this treatment. Without inquiring more closely into this, it remains clear that generally the cases most favourable for surgery are those most favourable for radiotherapy, and those unfavourable for the one, such as cases of cancer of the oesophagus, are also unfavourable for the other. Unfortunately the two methods, apart from palliative treatment, are not complementary, and where one fails—speaking quite generally—the other fails also. This is shown very well by the case of cancer of the larynx, where both surgery and radiotherapy can, up to a point, advance quite respectable claims, and their respective advantages have been debated now for many years.

A good instance of this kind of disputation is a recent paper by Nielsen and Strandberg[1] from the Finsen Institute in Copenhagen, where the art of radiotherapy has reached the peak of perfection. The results, therefore, must now be about as good as it is possible to achieve. Although the authors appear to be unaware of the fact, intrinsic cancer of the larynx is relatively uncommon in the Scandinavian countries, as compared, for example, with Great Britain, while the incidence in the upper jaw is greater. This accounts for the rather small size of their material, amounting to only 63 cases, though this is compensated by the careful study and records of the cases. They were all treated by protracted fractional irradiation with *x* rays, sometimes for as long as eight weeks, but recently for about three to four weeks, the total dose being 5,000 to 6,000 *r*, and occasionally 7,000 *r*. The authors state that perichondritis and necrosis have not been seen except in cases in which the cancer had already invaded the cartilage before treatment was instituted. There have been no late cutaneous changes of any severity. The sites of origin in these cases were three: (1) the true vocal cords; (2) the vestibule, which includes the false vocal cords, the laryngeal surface of the epiglottis, and the sinus of Morgagni; (3) the subglottic region. The authors state that "the cases most amenable to radiation therapy are absolutely those in which the mobility of the vocal cord is still unimpaired, or nearly so." Tumours of the ventricular bands and the immediate neighbourhood—that is, those in Group 2—are considered to be particularly radiosensitive.

In order to evaluate the results of treatment the cases were grouped into the following stages: (1) Those operable by laryngofissure: the carcinoma is localized to the anterior two-thirds of one vocal cord, which retains free mobility. (2) The carcinoma involves the anterior commissure and the anterior portion of both vocal cords, whose mobility is free or only slightly impaired. (3) Cases operable by laryngectomy or possibly hemilaryngectomy: the muscles are invaded and the cord fixed with possibly subglottic extension. Also subglottic cancers without enlarged lymphatic glands. (4) Cases with extension beyond the limits of the larynx. All patients with enlarged lymphatic glands are included in this group, and also carcinomas of the vestibule and extensive subglottic tumours. Cases in which the patient was over 70 were regarded as "biologically inoperable." There were 6 patients in Stage 1: these all remained well with a normal voice, 3 of them for more than 3 years and 1 for 5 years. There were 8 patients in Stage 2: these all remained well, but 3 of them for less than a year. In Stage 3 there were 21 patients, of whom 11 would have been operable by laryngectomy: of these none has survived 5 years, 3 for 3 years, and 8 for 1 year or less; the fate of the remaining 10 out of the 21 is not made clear. There were 28 inoperable cases in Stage 4: no patient has survived for 5 years, but 3 are alive after 3 years and 5 for lesser periods.

The authors complicate the report of their results, as is seen in almost every radiological report, by including cases which have been treated for less than 3 years. No surgeon would report a recent case unless for some exceptional reason, and would certainly never report a series under 3 and preferably not under 5 years. To report cases under 1 year is, however, an established radiological custom, and the condition of these recently treated cases is generally described as encouraging, which may be the case if encouragement is required, but they vitiate the statistics. This is shown by the fact that some of the cases in the above record were afterwards submitted to operation with survival for several years. Not only is it impossible to accept the standards of operability and inoperability proposed by the authors, especially in the matters of palpable lymphatic glands, encroachments on the pharynx, and perichondritis, but they fail to take account of improvements in surgical technique corresponding to improvements in radiological technique. The operation of laryngofissure gives at least 80% of freedom from recurrence for 5 years with very little disability, and the same may be said of modified excisions falling upon both cords, except that the voice is not so good though quite strong. At least 40% of those submitted to laryngectomy, even with a liberal view of its limitations, survive for 5 years, though many needing this operation have enlarged glands in the neck. With modern technique the disability is not very great, and a useful voice is obtained or a speaking instrument can be used, but the mutilation is serious compared with the result of a successful treatment by radiotherapy. It may, however, be much less so than the result of a radiotherapeutic failure.

[1] *Acta radiol.*, 1942, **23**, 189, 255.

It appears, therefore, that as an adequate operation is available for every stage of the disease which presents any prospect of benefit from radiotherapy, surgical treatment should be considered first, and radiotherapy adopted only if for some reason surgical treatment is contraindicated. These authors, however, would reverse this usually accepted procedure. They propose a test irradiation to discover how the tumour reacts. "If it reacts without local complications, during the first part of the irradiation, there is good hope that by continued treatment with full dose freedom from symptoms may be obtained." This compromise is unlikely to be generally acceptable, though it is often put into practice with uncomfortable results for both patient and surgeon, and a decision upon one or other line of treatment should be made in the beginning. This paper shows yet again that it is in the more advanced cases, in which laryngectomy, especially with the extensions of which it is capable, frequently succeeds, that radiotherapy fails except as a palliative, and this should influence the decision. The fallacy of biological inoperability at the age of 70 is shown by the case of a man aged 78 who had an extrinsic carcinoma of the larynx with enlarged glands in the neck. The glands in the neck, part of the pharynx, and part of the larynx were excised by lateral pharyngotomy. He succumbed recently to an apoplexy, having had no recurrence.

BYSSINOSIS AND BAGASSOSIS

Dangerous dusts in industry are mostly mineral, but there are two lung diseases produced by the inhalation of dusts of vegetable origin. Byssinosis is the name given to a disease in cotton operatives which has been the subject of several investigations in this country, and is now scheduled under the Workmen's Compensation Act. Its mode of production is still somewhat obscure, and it would be interesting to know whether the findings in a recent investigation in the United States have any bearing on it. There being a large cotton surplus in that country, needy rural families were provided free with enough for making mattresses, of which 3,944,456, as well as other articles, were made during 1940-1 at rural mattress-making centres. Large numbers of people so engaged developed within a few hours a transitory illness consisting of fever, headache, nausea, and vomiting, but without symptoms referable to the respiratory tract except a dry cough and a sense of discomfort or pressure in the chest. This illness was associated with the handling of a low-grade very dusty cotton; carding it and beating the filled mattresses to level them raised much dust, and the inhalation of this was clearly the cause of the illness. All the incriminated cotton was also stained, having a yellow or brown colour. P. A. Neal, R. Schneiter, and Barbara H. Caminita[1] describe an investigation which has brought the cause of this illness to light. Neither chemical nor mycological examination of dust from the stained cotton revealed anything significant; the abnormality was found to be bacterial. In the stained fibre were large numbers of bacilli, and cultivation of the dust showed the presence of many millions per gramme of a capsulated motile Gram-negative bacillus which was not found in cotton of good quality. The same micro-organism was recovered from the dust of a cotton mill in which "mill fever" had occurred some time earlier. Extracts of stained cotton dust and filtrates of cultures of the cotton bacterium produced inflammatory lesions when injected intradermally, and reproduced the full picture of the mattress-makers' disease when sprayed and inhaled by human volunteers. When the dust itself was inhaled and the disease produced, it did not appear that the cotton bacterium multiplied in the air passages. These and other experiments in a very thorough investigation seem to have established fully that this disease is due to the absorption of a bacterial toxin from inhaled dust.

Although this episode in the U.S.A. is exceptional, the possible relation between this disease and the "mill fever" or "Monday fever" of cotton operatives seems well worth investigation. These authors point out that the Departmental Committee on Dust in Card Rooms in the Cotton Industry[2] refers in its report to the presence of large numbers of Gram-negative bacilli in cotton dust, but considered them of no importance because such bacilli could not be found in the operatives' sputum. If such bacteria are responsible for any of the symptoms complained of by cotton operatives generally, the present American work fully explains why they should not be recoverable from the secretions of an affected person. "Monday fever" is a condition for which a bacterial intoxication affords a reasonable explanation; whether long repetition of this form of insult to the bronchial mucosa can be expected to give rise to the chronic bronchitis and emphysema which constitute byssinosis is another matter. It should certainly be worth while to reinvestigate respiratory disease in cotton workers from this new point of view.

Bagassosis is the term suggested in their recent paper in this *Journal*[3] by L. I. M. Castleden and J. L. Hamilton-Paterson for a somewhat similar condition, in that the dust producing it is also of vegetable origin. Bagasse is the fibre left after extracting the sugar from sugar-cane: board made from it is a good insulator, both auditory and thermal. Dry crushing of bagasse liberates much fine dust, and workers exposed to it developed after two to four months increasing dyspnoea, with severe cough and scanty sometimes blood-stained sputum: there is slight fever, and the *x*-ray picture is that of a bronchopneumonia. Complete recovery followed removal from the dusty atmosphere in two of their cases, but in two others and in further cases described by J. A. Gillison and F. Taylor[4] there was disability of longer standing, and some degree of pulmonary fibrosis may have been produced. No bacterial cause was found, either in dust or in sputum, but the patients had a cutaneous sensitivity to bagasse extract which was not found in controls. This is evidently a more severe and much more rapidly disabling condition than byssinosis, and is presumably a reaction to some chemical constituent of the fibre concerned.

STARVATION IN EUROPE

When the time comes for relief in Europe the Allied nations will be united in a Herculean task. The work must be carefully prepared beforehand, and plans are already engaging the attention of many persons and official committees. The first and most urgent requirement will be the provision of food and shelter for the starving, the refugees, and the destitute. Then will come medical care of the sick, reorganization of the social and medical services, and the setting into motion of agriculture and industry. For all this planning there must be a headquarters staff, under which the technique of relief and its specialist problems will have to be worked out in detail by *ad hoc* committees from among Allied representatives. The administrative capacity and pooled resources of the world will be taxed to the utmost. Medicine has an important

[1] *J. Amer. med. Ass.*, 1942, **119**, 1074.

[2] Home Office Report, H.M.S.O., 1932, p. 42.
[3] *British Medical Journal*, 1942, **2**, 487.
[4] Ibid., 1942, **2**, 577.

part to play in this humane work of relief, and what it can do is now being discussed. Doctors and nurses, it is obvious, will be wanted for medical relief. The planning and carrying out of nutrition schemes; measures for the control of typhus, malaria, enteric; the danger of the present continent-wide increase in tuberculosis—these are but some of the tasks for international medicine in the post-war period. But can anything be done now for the appalling famine in Greece, Belgium, Spain, Poland, Yugoslavia, and Western Russia? It is estimated that the present surviving population of Greece is some 6½ million and that the wheat now available, excluding imports permitted by the belligerents, would keep alive about 3½ million of them. In Athens 100,000 out of 1,000,000 have already perished. The plight of the Greek children is terrible. Even in December, 1941, the Athens Welfare Centre stated that 9 out of 10 babies were dying in the first six months because their mothers were starved and milk was almost non-existent, practically all the cattle having been slaughtered during the famine. The need to send milk for the children is urgent, and 100 tons of Canadian powdered milk are to be carried by Swedish ships and distributed by the International Red Cross, in addition to the monthly supply under navicerts of 15,000 tons of wheat. The first cargo of powdered milk has been dispatched, but it is not yet known whether it has reached its destination. Vitamins and powdered milk in much larger quantities and dried vegetables are essential to save lives and to counter an epidemic of nutritional disease of osteomalacic type which has developed in both children and adults. Here are some observations from eye-witnesses in Athens: " . . . The children had not even the strength to beg, and some had died as they crouched over a grating; they seemed to be asleep, and hours might pass before their companions realized they were dead" (January, 1942). "Orphans and abandoned children are found wandering in the streets . . . starving, dirty, pale, and thin, a sight recalling Dante. They stop at nothing to find a bit to eat, searching among refuse and fighting the dogs for something edible . . ." (March, 1942). The morbidity rate is such that in June, 1942, there were four children to a bed in one temporary hospital. Conditions are little better in Belgium. The infant mortality rate is rising steeply and is said to be now about four times as high as in 1939; famine oedema is seen and vitamin deficiency is common. The morbidity from tuberculosis has increased 30 to 80% in different parts of Belgium. In varying degrees of severity the same appalling conditions prevail in other European countries.

The sending of food to any occupied country has political implications which make relief out of the question unless guarantees can be given and accepted that the food will not be used by the enemy. And even if it is not used directly by the enemy it may be of use to him indirectly by sparing his own supplies to the country he occupies. But now that arrangements have been made to distribute cargoes of wheat and dried milk in Greece, our own Government should soon know if the distribution is satisfactory; it will then be easier to determine what further help can be given to the starving population, and especially the children, of Belgium. The Famine Relief Committee (67, Brook Street, London, W.1) has estimated the quantities of dried milk and vitamins (per million inhabitants) needed to save the lives of children in Greece and Belgium. These calculations can be applied to other countries. For Greece the tonnage of shipping per month is 2,000, and the Swedish Foreign Minister has stated the willingness of Sweden to carry relief.

In the armed Forces medical men treat the sick and the wounded prisoner with as much care as they treat their own men. In so far as it is compatible with the paramount task of winning the war, the relief of that pathetic casualty of war—the child ill from starvation—is an especial object of medical concern.

COMBINED TUBERCULIN AND RADIOLOGICAL SURVEY

In 1934 the Royal College of Physicians of London inaugurated under the terms of the Prophit Bequest a survey scheme with the following objects:

To determine the level of tuberculous infection by the graduated Mantoux tuberculin test.

To correlate the result of the Mantoux test with the results of *x*-ray examination of the thorax.

To determine the value of mass *x*-ray examination as a means of revealing unsuspected pulmonary tuberculosis.

To assess the possible prognostic significance of the Mantoux test.

To discover the existence and importance of opportunities for primary tuberculous infection in the population studied.

To determine the significance of certain abnormal appearances in the chest *x*-ray which are not yet fully understood.

This was a highly ambitious programme. An illustration of the difficulties met with in carrying out radiological and tuberculin surveys in this country is the fact that only now has the first communication[1]—and that a preliminary one—appeared on the work of this survey. Results are given of the tuberculin testing and *x*-ray examination of five groups of people, mostly between 15 and 25 years old: a volunteer control group of 1,543 persons (considered to be non-representative of London's average population, as the proportion of factory workers was small, and only a very small proportion came from overcrowded homes), 784 "contacts," 953 voluntary hospital and 523 municipal hospital nurses, 1,247 medical students, and 918 boys entering Royal Navy training establishments. The chief radiological findings at first examination are of much interest. In the control group only 0.13% were found to have pulmonary tuberculosis requiring treatment; an additional 0.71% were found to have inactive pulmonary tuberculosis. Healed primary lesions (that is, calcified foci of the primary complex) were detected in 7.2%. (This figure has little significance, because many such foci would not be discovered without routine over-penetrated and lateral radiographs.) In the contact group the first two percentages given above were respectively 2.4 and 2.5 (over 18 times as many active lesions). Among the hospital nurses active phthisis was found in 0.2% and inactive in 0.4% more. Among the medical students none was found to be suffering from active phthisis, and only 0.19% had inactive lesions.

The conclusions drawn from the results of tuberculin testing must be accepted with caution. International Standard, synthetic, medium, old tuberculin was used. The tests were read "after 48 to 72 hours," and the minimum positive reaction—apparently for all dilutions of tuberculin used—was taken as "2 mm. of definite oedema with surrounding erythema" (it is not stated how much erythema). Apart from the difficulty that must surely be met with in measuring "2 mm. of definite oedema" and distinguishing it from the needle puncture, it would be of interest to know on the basis of what work these criteria were adopted as sufficient to exclude false reactions. Using O.T., the following minimum criteria have been adopted by well-known workers in this field: D'Arcy Hart,[2] erythema or erythematous infiltration 5 mm. in diameter (Hart used

[1] Ridehalph, F., *Lancet*, 1942, **2**, 463.
[2] Med. Res. Cncl. Spec. Rep. Series No. 164, 1932.

a control test of broth in addition); Opie and McPhedran,[3] Wallgren,[4] Ustvedt,[5] Söderling,[6] Kayne,[7] 10 mm. erythema with infiltration. It will be agreed that the synthetic medium tuberculin is "purer," but even in connexion with this the State Serum Institute at Copenhagen, on the basis of extensive and careful work by Holm,[8] recommends[9] the following as the minimum requirements for a positive reaction: a "papule" of 7 mm. at 48 hours and 5 mm. at 72 hours in the first test and of 10 mm. (48 hours) and 8 mm. (72 hours) in the second and third tests. Even with the still purer PPD, Aronson and his co-workers at the Henry Phipps Institute[10] regard the minimum for a positive reaction as "some redness and definite oedema more than 5 mm." Thus it would appear that the results given in the Prophit survey publication cannot be considered altogether reliable in regard either to the incidence of tuberculin-negative persons in the different groups or to the proportion that react to the different strengths of tuberculin. For instance, a simple calculation shows that no less than 90% of the tuberculin-positive controls are said to have reacted to 1 in 10,000 tuberculin, a high figure indeed when contrasted with 61% to 68% in different age groups found by D'Arcy Hart,[2] and 50% to 68% by Madsen and Holm.[11] Nor can the conclusions be accepted in regard to increase or decrease in sensitivity in repeat tests after an interval. Our final comment is this. Dr. Ridehalgh finds that, among the controls aged 15 to 30, 7.5% were tuberculin-negative; among the hospital nurses, 11.5% (voluntary) and 17.8% (municipal); and among the boys aged 15–16 in naval training, 34.0% and 21.3%, depending on the proportion coming from rural districts. It is safe to say that these percentages are actually higher by an unknown amount, and therefore that an appreciable percentage of individuals reach adult life even in towns without being primarily infected.

SURGERY OF OESOPHAGEAL CANCER

In 1913 Torek performed the first successful operation for total excision of the oesophagus for carcinoma; this brilliant achievement was further enhanced by the patient's surviving for eleven years without recurrence; during this time the distal end of the oesophagus in the neck was connected to the gastrostomy by a rubber tube, and in this way a good state of nutrition was maintained. The promise that Torek's operation held out was not to be easily fulfilled, and malignant disease of the oesophagus has continued to be the surgeon's despair. Indeed Ochsner and De Bakey in a recent review[12] state that out of a total of 53 additional recorded cases 41 of the patients (70.6%) have died. No doubt one reason for the slow progress, in addition to the complexity of the problem, was the absence of wide experience in intrathoracic surgery. The recent rapid development of the surgery of the thorax has directed attention anew to the problem of partial or total extirpation of the oesophagus, and, slowly but surely, much new ground is being gained.

Ohsawa's[13] report from Kyoto in 1933 of 8 successful cases of resection of the cardia and lower end of the oesophagus with immediate restoration of continuity passed almost unnoticed, and it was not until Adams and Phemister[14] published (from America) in 1938 a successful case of resection of the lower oesophagus with immediate oesophago-gastrostomy that interest became fully aroused; since then at least a dozen other such cases have been recorded in the U.S.A. and several more complete oesophagectomies. Experimental investigations have also been made into methods of resection, suture, and restoration or reconstruction of continuity. Carter, Stevenson, and Abbott,[15] for example, have shown that implantation methods of joining oesophagus to stomach are followed by stenosis, and that direct mucosal apposition is necessary. Improved methods of anterior oesophagoplasty are described by Stephens[16] in a recent review of 23 cases submitted to operation. Carter, Abbott, and Hanlon[17] record their use of tubes made from the greater curvature in restoring continuity. Much of this experimental surgery is of a high order and of great interest, even though the methods described may not be finally accepted. The main difficulty in reconstruction of a new anterior oesophagus is in securing sound union between skin and stomach: fistulae readily form, and the best way to avoid this is by using an inferior oesophagostomy as advocated by Garlock, Wookey, and Phemister. Unfortunately this cannot often be done, but when possible it is a simple manœuvre, and the oesophageal mucosa and the skin tube take much more kindly to union than stomach and skin. Phemister[18] reports 12 cases of excision with 8 immediate survivals; Wu and Loucks,[19] writing from Peking, record 11 cases with 8 survivals, in 5 of which continuity was restored at once by direct oesophago gastrostomy.

It is interesting to compare these American experiences with work just recorded in this country. Allison[20] writes from Leeds of four patients who survived the operation but unfortunately died of recurrence within a year. Franklin, from Prof. Grey Turner's clinic at Hammersmith, describes two cases of total oesophagectomy: one of his patients died 16 months later from metastases; the other is still alive and well after 18 months. Prof. Grey Turner has done much to keep alive surgical interest in carcinoma of the oesophagus in this country and has refused to admit that the problem is insoluble. His well-known case of success by the "pull-through" method was a milestone in the surgery of this condition, although it is in essence a "trick" that can scarcely be expected to supplant the direct approach through open thoracotomy. Finally, Brock[21] records the first case from this country, in fact from Europe, of resection of a tumour of the cardia involving the lower end of the oesophagus with immediate direct oesophago-gastrostomy by a combined abdomino-thoracic operation.

Perusal of all these papers impresses one with the difficulties and problems that have to be faced in those cases of total extirpation in which an anterior oesophagus has to be reconstructed. When oesophago-gastrostomy can be performed both patient and surgeon are spared much extra anxiety and operating. There seems every reason to strive to achieve this in all cases of carcinoma of the lower part of the oesophagus in which total oesophagectomy seems unnecessary on pathological grounds, as the main spread of the metastases is downwards to the glands along the lesser curvature. The recurrence rate is discouraging, but this is a common experience in the early attempts at surgery of malignant disease of any organ and should be a spur, not a deterrent, to effort: Torek's original patient survived 11 years without recurrence.

[3] *Amer. Rev. Tuberc.*, 1926, **14**, 347.
[4] *J. Amer. med. Ass.*, 1928, **111**, 1876.
[5] *Rev. Tuberc.*, 1932, **13**, 121.
[6] *Acta pædiat.*, 1934, **15**, 424.
[7] *Lancet*, 1934, **2**, 1333; and *British Medical Journal*, 1938, **1**, 992.
[8] *Undersögelser over Tuberkulin*, 1934, Copenhagen.
[9] Instructions enclosed with tuberculin sent out by the Institute.
[10] *Amer. Rev. Tuberc.*, 1934, **30**, Suppl. to Dec. issue.
[11] *Quart. Bull. Hlth. Org. L.o.N.*, 1935, **4**, 475.
[12] *J. thorac. Surg.*, 1941, **10**, 401.
[13] *Arch. Jap. Chir.*, 1933, **10**, 605.
[14] *J. thorac. Surg.*, 1938, **7**, 621.
[15] *J. thorac. Surg.*, 1941, **10**, 446.
[16] Ibid., 1942, **11**, 469.
[17] Ibid., p. 494.
[18] Ibid., p. 484.
[19] Ibid., p. 516.
[20] *Brit. J. Surg.*, 1942, **30**, 132.
[21] Ibid., p. 146.

REINSTATEMENT REFUSED AFTER WAR SERVICE

CASE OF LEICESTERSHIRE POLICE SURGEON

The Government has frequently declared that men who have served with the Forces should not be penalized with regard to employment on their return to civil life. Private employers have been exhorted to recognize this principle, but they have a right to expect that official bodies and local authorities will set the example. An instance of what appears to be a flouting of this principle has occurred in the case of a standing joint committee in dealing with a police surgeon. The police authority in each county is a standing joint committee, which is composed of representatives of the county council and Quarter Sessions. It may be that its double derivation is considered to give it some right to override ordinary standards of procedure by which both its parent bodies would feel themselves bound, but the facts are extraordinary enough to warrant public attention. If the facts available are not all the facts, and other reasons in the background have operated, the standing joint committee can hardly complain, because its response to repeated requests by the aggrieved person and those acting for him is the autocratic utterance, "We do not give our reasons."

At the outbreak of the war Dr. Justin Davies, who held the appointment of surgeon to the Leicester County Police, was called up as a Territorial medical officer for military duties. He gave to the chief constable the name of a deputy to act during his absence, but the chief constable, according to Dr. Davies, suggested that he should resign his post temporarily, which he did, and a few days later it was intimated to him that another doctor had been appointed to take over his duties. After about twelve months Dr. Davies relinquished his commission on the ground of ill-health, returned to his practice, and notified the chief constable, who, however, informed him that the doctor who had been appointed to take over the duties in his absence had been confirmed in his appointment. No reply was received to his request for the reasons for his supersession, and when he asked for an interview with the chairman or with the committee he was refused. Later, at the request of the Local Medical War Committee, the police surgeon who had been acting in Dr. Davies's absence submitted his resignation, and, following the usual procedure when a practitioner acts as deputy, paid into the Protection of Practices Bureau half the fees he had received during his tenure of the office. The standing joint committee accepted the resignation of the deputy, but some months later its clerk informed the Local Medical War Committee that the erstwhile deputy had been reappointed, with his partner to act with him, "in succession to Dr. Justin Davies, whose appointment was determined some time ago." Incidentally the partner was away, serving with the Army. When Dr. Davies joined up for military duty his temporary resignation was asked for, and yet the standing joint committee appoints as one of his successors a practitioner who is already in the Army.

Repeated letters have passed between the Local and Central Medical War Committees and the clerk to the standing joint committee in an endeavour to ascertain from the latter why Dr. Davies was not reinstated on his return from active service. The invariable reply is: "It is not the [standing joint] committee's custom to give any reason for any decision at which they may arrive." Equally unsatisfactory has been the correspondence with the Under-Secretary of State for the Home Office. Three months elapsed before an official of the Home Office replied that the appointment of a police surgeon was a matter for the police authority and did not require Home Office approval, but the Secretary of State had made inquiries of the Leicestershire Standing Joint Committee, which was "not prepared to give their reasons for not reappointing Dr. Davies." Apparently the standing joint committee was as high-handed with the Home Office as it had been with the Local Medical War Committee. It never gives its reasons, even for disregarding, *prima facie*, the requests of the Government to reinstate men on their return from Service, and Whitehall is reduced to impotence by the feudalism of Leicestershire.

There the matter rests, but it is an uneasy rest. Here is a medical man who temporarily relinquished an appointment solely because of his absence with the Forces. On his return he is refused reinstatement by a public body, which declines to give its reasons. If there are reasons which justify terminating Dr. Davies's appointment, the practitioner and those acting on his behalf have the right, as an ordinary principle of English justice, to be informed of them. If there are no reasons, the action of the Standing Joint Committee for Leicestershire will cause widespread disquiet among those who, relying on the assurance that their jobs, big or little, whole-time or part-time, would be available on their return, have gone cheerfully to serve their country. If county councils and standing joint committees and bodies of that description cannot act fairly in such a matter, what can be expected of the ordinary tradesman, to whom it may mean personal sacrifice? It is a question of principle far more important than the loss to this practitioner of a part-time appointment. It cuts across the common rights of aggrieved persons and appears to flout the undertaking of the Government which, by implication, extends to local authorities.

It may be that the standing joint committee had in mind the dictum of Lord Mansfield: "Never give your reasons, for your judgment will probably be right; but your reasons will certainly be wrong." But whether in this case the judgment is right or wrong is past finding out save behind the shut doors—shut even to the aggrieved person—of the Standing Joint Committee for Leicestershire.

ELECTROMEDICAL APPARATUS AND ELECTRIC PADS AND BLANKETS

The Board of Trade and Ministry of Supply have consulted the Ministry of Health regarding future production (in the United Kingdom) of electromedical apparatus and electric blankets and pads. War demands upon man-power and the increasing and inevitable shortage of raw materials render it imperative that production be controlled and limited to the minimum essential requirements and, also, that available supplies shall be procurable only for clearly established medical needs. Agreement has been reached on future control measures.

Measures for Control

Henceforth raw material will be released only for the production of electromedical apparatus of major importance in medical treatment and for the purpose of treatment which cannot be carried out by alternative means involving less use of labour and materials. Apparatus of a luxury type or constructed to a luxury standard will no longer be available after existing stocks are exhausted, and no material will in future be released for the production of equipment which has not a clearly accepted and defined medical value.

Under the Machinery, Plant, and Appliances (Control) (No. 3) Order, 1942 (S.R. & O. 1942, No. 2487) (price 2d.), manufacturers may supply apparatus of an electromedical nature to members of the public only where a licence under the Order has been obtained from the Board of Trade. The purchaser must obtain the licence and the Board of Trade will require applications to be supported by a medical certificate setting out detailed particulars of the apparatus required, the condition for which its use in treatment is required, and certifying that the patient is unable to make use of hospitals, clinics, or other existing facilities. The applications will be referred to the Ministry of Health for confirmation that the designated apparatus is essential for the particular condition. Application forms may be obtained from Industrial Supplies Department (Machinery Licences Division), Board of Trade, 1-6, Tavistock Square, London, W.C.1.

Manufacturers licensed by the Board of Trade under the Electrical Appliances (Control of Manufacture and Supply) Order, 1942 (S.R. & O. 1942, No. 1453) (price 1d.), for the manufacture and supply of electrical heating pads and blankets may supply such pads and blankets to members of the public only in those cases where a certificate from a registered medical practitioner, to the effect that such supply is essential on medical grounds, has been submitted and the written approval of the Board of Trade, acting in consultation with the Ministry of Health, has been given for the supply. Applications for licences for electric blankets and pads should be addressed to the Board of Trade, Imperial Chemical House, Millbank, S.W.1.

Supplies to hospitals and similar institutions will be regulated by the issue of licences by the Board of Trade, but, while it is hoped

to meet reasonable requests, strict scrutiny of applications will be necessary.

Care in Issue of Medical Certificates

Medical practitioners will realize that the serious limitation of production which will now be imposed renders it essential, in the interests of the really necessitous cases, that the most careful consideration and discrimination should be exercised in the issue of certificates, which should be given only where the need is absolutely imperative and alternative treatment is not practicable. Only with the full understanding and co-operation of the medical profession will it be possible to safeguard the essential needs of patients without prejudice to the vital national needs for man-power and material.

NEW YEAR HONOURS

The names of the following members of the medical profession were included in a New Year Honours List published in *Supplements* to the *London Gazette* on Jan. 1 and 4:

Barony

Sir CHARLES MCMORAN WILSON, M.C., M.D. President of the Royal College of Physicians of London.

G.B.E. (Civil Division)

Sir HENRY HALLETT DALE, C.B.E., M.D., D.Sc., F.R.C.P. Lately Director of the National Institute for Medical Research. President of the Royal Society.

K.C.B. (Civil Division)

Sir (WILLIAM) WILSON JAMESON, M.D., LL.D., F.R.C.P., D.P.H. Chief Medical Officer of the Ministry of Health and Board of Education.

K.B.E. (Military Division)

HENRY LETHEBY TIDY, M.D., F.R.C.P. Hon. Major-Gen., late R.A.M.C.

Knighthood

RATNAJOTI SARAVANAMUTTU, M.B., C.M. For public services in Ceylon.

C.B. (Military Division)

JOHN ALEXANDER MANIFOLD, D.S.O., M.D., D.P.H. Major-Gen., late R.A.M.C. Honorary Physician to the King.

C.S.I.

HEERAJEE JEHANGIR MANOCKJEE CURSETJEE, D.S.O., B.Chir. Major-Gen., I.M.S. Honorary Surgeon to the King. Deputy Director of Medical Services, Headquarters, North-Western Army.

C.M.G.

EDGAR LAURENT, M.D. For public services in Mauritius.

C.I.E.

EDWARD COTTER, M.B., B.Ch., D.P.H. Lieut.-Col., I.M.S. Public Health Commissioner with the Government of India.

C.V.O.

CHARLES SCULTHORPE MORRIS, M.R.C.S., L.R.C.P., L.D.S.

C.B.E. (Civil Division)

WALLACE RUDDELL AYKROYD, M.D., Sc.D. Director, Nutrition Research Laboratories, Coonoor, S. India.

FREDERICK HALL, M.D., D.P.H. Medical Officer of Health to the Lancashire County Council. For services to Civil Defence.

Hon. Capt. Rai Bahadur MAHARAJ KRISHNA KAPUR, L.M.S., D.P.H. Medical practitioner, Lahore, Punjab.

WILLIAM PATERSON HAY LIGHTBODY, L.R.C.P.&S.Ed., D.P.H. Colonial Medical Service. Director of Medical Services, Sierra Leone.

JOHN BOWES MCDOUGALL, M.D.Glasg., F.R.C.P.Ed. Medical Director of Preston Hall, Maidstone.

M.V.O. (4th Class)

JOHN ROBERT KENNEDY, M.B., C.M.

O.B.E. (Military Division)

JUSTIN WILFRID FRANCIS ALBUQUERQUE, M.B., B.S., D.P.H. Lieut.-Col., I.M.S.

EVEPETT FRANCIS CRUTCHLOW. Temp. Acting Surg. Lieut.-Cmdr., R.C.N.V.R.

FREDERICK MCKIBBIN, M.B., B.Ch. Lieut.-Col. (temp. Col.), R.A.M.C.

DAVID MITCHELL WALLACE, F.R.C.S. Acting Wing Cmdr., R.A.F.V.R.

EDWARD REX PASCOE WILLIAMS, M.B., B.S. Surg. Cmdr., R.N.

O.B.E. (Civil Division)

ALFRED INNES COX, M.R.C.S., L.R.C.P. Lieut.-Col., I.M.S. District Medical Officer and Superintendent, Government Headquarters Hospital, Ootacamund, Madras.

HUGH GREGAN CRAWFORD, M.C., M.R.C.S., L.R.C.P. For services to the Boy Scout Movement in Staffordshire.

DAVID MONTAGUE DE SILVA, M.R.C.S., L.R.C.P., D.P.H. Air Raid Precautions Controller, Ceylon.

JAMES DUNLOP, M.B., Ch.B. Medical Officer for Civil Defence, Glasgow.

JOHN GILMOUR, F.R.C.S.Ed., D.P.H. Regional Medical Officer, Department of Health for Scotland.

WILLIAM MUIR HOWELLS, M.B., Ch.B., D.P.H. Colonial Medical Service. Deputy Director of Medical Services, Gold Coast.

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BERNARD MOISER, M.B., D.P.H. Leprologist to the Government of Southern Rhodesia and medical officer in charge of the Leper Settlement near Fort Victoria, Southern Rhodesia.

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HENRY SACCO, M.D. For public services in Malta.

ALFRED TENNYSON SMITH, M.D. County Commissioner, St. John Ambulance Brigade, Hampshire and Isle of Wight. For services to civil defence.

Prof. VITTORE VASSALLO, M.D. Superintendent, Hospital for Mental Diseases, Malta.

M.B.E. (Military Division)

NARAYAN VISHWANATH KARVE, M.B., B.S. Capt., I.M.S.

JAMES LESLIE MCCALLUM, M.R.C.S., L.R.C.P. Capt. (temp. Major), I.M.S.

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PIERRE ANGE ANTOIN ROSTANT, M.B., Ch.B. Colonial Medical Service. Medical Officer (Surgeon), Trinidad.

Miss MARGARET SOPHIA SHARP, M.B. Centre Organizer for Bradford County Borough Women's Voluntary Services for civil defence.

Hon. M.B.E. (Civil Division)

Dr. MOSHE WALLACH. Principal of the Shaarei Zedek Hospital, Palestine.

PREVENTION OF CRIPPLING

The following statement has been issued by the Joint Standing Committee of the Empire Rheumatism Council and the British Orthopaedic Association, the chairman and vice-chairman of which are respectively Lord Horder and Mr. G. R. Girdlestone:

1. The Empire Rheumatism Council and the British Orthopaedic Association are in cordial agreement that their mutual co-operation in the diagnosis, prevention, and treatment of crippling conditions will be of the greatest service to the health of the community.

2. Both bodies aim at close liaison between the physician specializing in rheumatism and the orthopaedic surgeon, seeking to enlist the sympathetic co-operation of the general practitioner, the public health services, and social workers generally.

3. Orthopaedic hospitals and orthopaedic departments of general hospitals should include on their staffs a physician with special knowledge of the rheumatic diseases.

4. Rheumatism centres should include on their medical staffs an orthopaedic surgeon.

5. Since the application of methods of physical therapy and of occupational therapy for orthopaedic and rheumatic patients is largely identical, a joint out-patient clinic should, wherever practicable, serve for both classes of patients. In such joint centres the orthopaedic cases will be under a team headed by an orthopaedic surgeon; for rheumatic cases the team will be headed by a physician.

6. In view of the growing appreciation of the regionalization of medical services the scheme for rheumatism centres should be planned to fit into such schemes as may be arranged for the future. This has, in fact, already largely been done in orthopaedic schemes.

7. As in orthopaedic work the development of successful centres has been based upon the legal requirements of the notification of certain crippling diseases and upon the public responsibility for the provision and payment for their treatment, so in rheumatic disease a similar degree of responsibility should be assumed by the State or local authority.

8. Adequate provision for the training of young physicians and surgeons in research, diagnosis, and treatment should be associated with suitable encouragement to make the study of rheumatic disease a life-work.

9. To put into effect the agreed plan of co-operation, a Joint Standing Advisory Committee should be constituted of equal, or nearly equal, numbers of representatives of both organizations, with a secretariat of two, one from each organization.

The Standing Advisory Committee includes, in addition to the chairman and vice-chairman, Dr. Hugh Burt (acting for Lieut.-Col. W. S. C. Copeman), Mr. Norman Capener, Mr. W. A. Cochrane, Squadron Leader W. D. Coltart, Prof. L. S. P. Davidson, Mr. A. G. Timbrell Fisher, Mr. S. L. Higgs, Brig.-Gen. F. D. Howitt, Prof. H. J. Seddon. Joint Secretaries—Mr. Norman Capener and Sir Frank Fox.

Reports of Societies

INFLUENCE OF DIET DURING PREGNANCY

At a recent meeting of the Scottish Group of the Nutrition Society held at Edinburgh University the subject for discussion was the influence of diet during pregnancy on (*a*) the health of the mother, (*b*) the growth and viability of the foetus, and (*c*) the post-natal development of the offspring.

Prof. R. C. GARRY, who presided, pointed out that rational treatment of many of the disturbances of pregnancy must wait on a fuller understanding of maternal and foetal physiology during pregnancy. Although a physiological process, pregnancy was of necessity a strain on the maternal organism, and latent defects in the mother might become patent at this time. Unfortunately, too, pregnancy imposed an economic and physical strain on the mother and the entire family, which it should be the duty of a satisfactory social system to alleviate.

Prof. A. St. G. HUGGETT, discussing the part played by the placenta in foetal nutrition, said the placenta was a secretory, a storage, a transfusion, and an endocrine organ, reaching its maximum development comparatively early in pregnancy; 70% of the final weight of the human foetus was laid down in the last three months of pregnancy, when placental growth was at a standstill or even showing regression. Transmission of material across the placenta was controlled by factors as yet little understood. In experimental animals, restriction of carbohydrate intake in the mother's diet caused a fall in maternal liver glycogen while leaving the foetal liver glycogen uninfluenced. On the other hand, the administration of excess carbohydrate to the mother only slightly raised the glycogen content of the maternal liver, while the glycogen in the foetal liver increased markedly. Yet during all these changes the glycogen content of the placenta remained practically unchanged.

Vitamins, Calcium, and Iron

Dr. H. M. SINCLAIR, who reviewed the evidence for nutritional deficiency during pregnancy, said there were indications that supplementary feeding of vitamins A and D lowered the incidence of puerperal sepsis, but it was doubtful if the action was specific. There were conflicting reports on the importance of the vitamin B complex in preventing the toxaemias of pregnancy, gestational polyneuritis, and Wernicke's encephalopathy. Claims for the efficacy of vitamin E in the prevention of abortion had still to be substantiated, and it was not known if vitamin C and/or K played any part in preventing accidental haemorrhage during pregnancy and excessive bleeding at parturition. Epithelial hyperplasia of the gums was not uncommon in pregnancy, but did not yield to vitamin C therapy. There was evidence that this condition was due to excessive quantities of oestrogens in the tissues. Iron-deficiency anaemia was common during pregnancy, but the physiological hydraemia of pregnancy must be taken into account in assessing the severity of the condition. The demands of the foetus for calcium, particularly during the last months, were large and undoubtedly depleted the maternal reserves. Nevertheless, supplementary feeding of calcium must not be indulged in lightly, since it might prolong pregnancy and harden the foetal skull.

Prof. DUGALD BAIRD showed that stillbirths and neonatal deaths were more common in hospital practice than in specialist practice, 3.3% as against 0.6%. Since the standard of medical and nursing care in the two groups was practically the same, the social status, with its different dietetic background, was probably the operative factor. The same factor was possibly the cause of a greater percentage of premature labours in hospital maternity practice—9 as against 2 in specialist practice. On the standard of the League of Nations Technical Commission the diet of pregnant women was frequently defective, and evidence was accumulating that raising the diet to this standard decreased the incidence of prematurity and lowered the rate of stillbirth.

Mr. W. GODDEN said that stillbirths and neonatal deaths were only too common in farm practice, and there was little doubt that they were due to dietary deficiencies. There must be an adequate supply of energy, of protein, and of calcium and phosphorus. Iron deficiency, especially in the breeding sow, did not affect fertility but adversely affected viability during the suckling period. An adequate supply of vitamins A and D was essential for successful pregnancy in cattle, sheep, and pigs; the evidence concerning the vitamin B complex was equivocal, and there was no definite evidence that vitamin E deficiency occurred in mammals other than the rat.

Dr. I. LEITCH (Rowett Research Institute) discussing the incidence of stillbirths and neonatal deaths in England and Wales, in Scotland, and in New Zealand, said there was obviously something wrong with Scotland, with a figure of 80 per 1,000 total births as against 66 for England and Wales and 51 for New Zealand.

ADRENAL NEUROBLASTOMA

At the last meeting of the Section of Pathology of the Royal Academy of Medicine in Ireland, with the president, Dr. M. H. O'CONNOR, in the chair, Dr. A. THOMPSON described a case of neuroblastoma of the adrenal medulla. The patient, a girl aged 6 years, was admitted to hospital suffering apparently from an intracranial condition. She died twenty-four hours after admission. On admission she was in a state of very grave collapse, bleeding from the eyes, nose, and bowel. There was considerable protrusion of the eyes. Dr. Thompson had thought at first that the case might be one of chloroma because of the prominence of the eyes and the very severe degree of anaemia. Post-mortem examination showed a neuroblastoma of the right adrenal gland. The tumour was about the size of a billiard ball. According to the literature these cases were highly malignant, and the primary tumour usually did not attain a size large enough for palpation before the patient died.

Dr. O'CONNOR said that the striking feature of these tumours was the lymphatic spread. Dr. THOMPSON, in reply, said that no cerebral metastases had been found post mortem. The case had started as an unexplained anaemia and the child had been in hospital in the country for some weeks before her eyes had started to protrude.

At a recent meeting of the Maternity and Child Welfare Group of the Society of Medical Officers of Health, with the president, Dr. CATHERINE MORRIS JONES, in the chair, an interesting experiment—namely, the establishment within the boundaries of a factory of an ante-natal and gynaecological clinic—was described by Dr. L. B. BOURNE, medical officer to the factory, and Mr. J. V. O'SULLIVAN, consultant to the works clinic. The clinic is in premises outside the workshops, and can be visited by women unknown to their fellow workers, and an appointment system prevents waste of time. The medical staff, by their knowledge of a woman's state of health, are able to modify her working hours immediately when necessary. Mr. O'Sullivan commented on the continued good health of most of the women, who carried on their work up to a late stage of pregnancy. Fatigue was more usually due to the strain of shopping and to home duties in addition to the factory work, rather than to the factory work itself. Both speakers claimed that the experiment had already justified itself in lessened absenteeism and improved team-work. The clinic was very popular among the women who used it, and the extension of the idea to other areas was worth consideration by the authorities.

MERSEYSIDE HOSPITALS COUNCIL

The latest report of the Merseyside Hospitals Council announces a record income for 1941: employees' contributions came to £229,805, an improvement of some £36,000 on the year before, and employers' contributions to £52,721, an increase of £6,500. On the other hand, Hospital Sunday collections, subscriptions, donations, and the proceeds of special efforts were heavily down. In 1941 the Council came yet nearer to that state of affairs when it will pay 20s. in the pound to the hospitals for their services to its contributors. During the year £134,253 was distributed to 24 associated voluntary hospitals, together with £30,623 out of the balance brought forward from the previous year. A sum of £16,136 was paid to the medical staffs fund. Twenty-one other voluntary medical institutions received £11,246, municipal hospitals £30,893, and civic charities £22,506. This last item follows upon an agreement during wartime that one-half the yield of the extra penny which was introduced should go to the war funds of the Lord Mayor of Liverpool and the civic heads of the other Merseyside local authorities. Of the post-war hospital position the report says that Merseyside hospital planning is considerably ahead of that of many areas. Merseyside "is ready geared to play its part in the co-operative effort which the Government contemplates for after the war."

Correspondence

Pasteurization of Milk

SIR,—In your leading article (Dec. 19, p. 727) the writer says: "By pasteurization we mean, it should be clear, the freeing of milk from pathogenic micro-organisms that might infect the consumer." Most people define pasteurization as the raising of milk to 150–160° F. for 20 minutes. The large retailers of milk pasteurize it on the day of collection in order that it may not be bad on the day of delivery—it is a commercial proposition, is it not?

Is not the real crux of the matter whether pasteurization kills tubercle bacilli? In my opinion and experience it does not. I am really appalled by the number of cases of active tuberculosis I see in abdominal glands at operation. I have gone into the matter carefully, and found that many of these cases have consumed pasteurized milk only. I am even more appalled by the number of *x*-ray films I see showing evidence of tuberculosis of the mesenteric glands. I now advise my patients to give their children T.T. milk or boiled milk only.

The writer of your article is entitled to believe in pasteurization, but he is not entitled to think that those who do not cannot think straight. Every problem has two sides, and what is right to-day is wrong to-morrow (*vide* the treatment of fractures by skin-tight plasters).—I am, etc.,

Rotherham. ERIC COLDREY.

*** That in some instances tubercle bacilli are present in so-called pasteurized milk is an argument not against pasteurization but against inadequate pasteurization.—ED., *B.M.J.*

SIR,—In your leading article entitled "Do Doctors disagree about Pasteurization?" (Dec. 19, p. 727) there are points, I think, which should be followed. To begin with, Is raw milk better for the child than pasteurized milk? Sir Frederic Still on Dec. 28, 1938, wrote me: "I think in several ways raw milk is to be preferred to pasteurized milk if only we could exclude infection in raw milk." A county medical officer on July 24, 1932, wrote: "I have been consistently in favour of raw milk despite the almost insuperable difficulty of always getting milk of sufficiently clean quality."

The infant mortality in Toronto, where all milk is pasteurized, is double that in Victoria, Vancouver, where all milk is drunk raw. My own statistics dealing with large masses of children for 18 years show raw milk to be a good thing. At least one-third of these children, and all infants and toddlers, were on T.T. milk.

I have pointed out before that the credit does not lie wholly on raw milk. The credit must be shared with the excellent health services of the L.C.C. and other counties, and their extra milk for school children and the plain hot dinners. These clinics were my right hand in my fight against death and disease.

It is said that of cows reacting to the tuberculin test only 22% give tuberculous milk, and that of the human tuberculosis population only 5% suffer from bovine tuberculosis. How, then, does T.B. get into milk? Largely through dung and dust, as does 99% of other pathological germs. Abortus and streptococcus can be eliminated, as they come direct from the cow.

W. S. Forbes in the *Journal* of March 24, 1934, says: "The only public health consideration is not pasteurizing but production of clean milk." We would then not have the taking of unmeasured doses of bacteria as an oral vaccine, but one under control.

Now a word about epidemics. There is a tendency to lay too much stress on epidemics. They are accidental, like the water-borne typhoid outbreaks. I wonder how many practitioners have had cases due to *Brucella abortus*. In my 18 years among children I have had one; in 12 years of private practice none. To say these cases were not recognized won't do, for to do so casts reflection on our teaching schools—a continued fever leads to a blood test, and more often than not it is typhoid or malaria; not often is it abortus infection.—I am, etc.,

Eastbourne. A. H. MACDONALD.

SIR,—The leading article (Dec. 19, p. 727) asking the question, "Do doctors disagree about pasteurization?" showed up your *Journal* at its worst, and must have disgusted many readers. It was a nasty, totally irrelevant article, full of an ill-conceived and spurious cynicism, written by someone whose mentality was divorced from the basic aims which, even to-day, thank God, animate the minds and the ideals of the majority of our profession. Sir Henry Morris-Jones and his colleagues have put before His Majesty's Government a resolution based upon the highest principles which should actuate our profession, principles at which your leader writer sneers—namely, those which will lead to the ultimate prevention of a terrible disease.

No one in his sane senses would allow "typhoid bacilli to appear in the household drinking-water as a method of immunizing the susceptible population against enteric fever," but, as described in the same issue of your *Journal* (p. 719), Dr. R. J. Peters and Dr. D. H. Clutterbuck did not make an attempt to eliminate typhoid fever from Glasgow by pasteurizing the drinking-water of the affected area; they eliminated the source of the infection, and cleansed a butcher's shop where the motto was not apparently that "cleanliness was next to godliness." Helpful as antiseptics and sulphonamides may be, it is not by the use of these but by excision of dirty wounds that we have been able to save thousands of lives, thus getting rid of the dirt before it can do further mischief.

Pasteurization is right so long as you, Sir, are prepared to forget that tuberculous-infected cattle can be got rid of, that byres, milkers, and dairies can be kept clean, that cows' teats can be cleaned, and that the homes of our dairy workers can be made fit for human beings to live in and not the wretched huts in which we see our farm workers live, and which would shame, in many cases, an Indian's wigwam. If an Easter Ross farmer sold a bull for three thousand guineas for transport to the Argentine that bull would not be allowed to enter the Argentine did it possess the slightest taint of tuberculosis, but that same bull, at a much reduced price, would be allowed to live in this country and spread among our folk all the disease, misery, and pestilence which you, Sir, of all people, should use every ounce of your energy to get rid of; and you are satisfied to think that the cows which it would infect would have their milk pasteurized instead of the bull having its throat cut.

The elimination of infected cattle is not impossible if the powers that be had the guts to insist that it should be done, nor is it impossible to have clean byres, clean milkers, clean dairies, and decent homes for our farm workers; but it is you who believe "the world to be flat" if you think that it is pasteurization which is to remove the evils of which you write. If you wish to get a cart up hill put the horse in front, not behind; advocate getting rid of the root cause of this evil, and do not try, even with the help of Prof. Selby Wilson, to mislead the public that we are doing all when we are doing nothing. If you are in real difficulty call in to your help Sir William Beveridge or Lord Cooper. These men seem to have the knack of getting at the root of our economic problems; I think it would take either of them little time to get the worm out of the core of this evil. Their methods reach beyond the self-interested.—I am, etc.,

Tain. E. K. MACKENZIE.

SIR,—The majority of your readers will wonder still more at your moderation in the leading article (Dec. 19, p. 727) regarding this question. It seems almost incredible that two such responsible members of the profession should publicly disagree with the accepted views of the profession on this important matter.

If Sir Henry Morris-Jones were conversant with the legislation that has been in force in the Province of Ontario, Canada, forbidding the sale of milk which has not been pasteurized, he would discover that surgical tuberculosis has been gradually eradicated from the Province. Prof. Gallie, professor of surgery in Toronto University, informed me in 1938 that he rarely saw cases of surgical tuberculosis in his wards or practice and that he considered that the enforced pasteurization of all milk for human consumption was responsible for this remarkable achievement. This was confirmed by many other authorities in Canada whom I interrogated.

It is well known that tuberculin-tested herds cannot be relied upon to produce milk free from tubercle bacilli, for

the simple reason that cows acquire the disease in the intervals between the tests and therefore contaminate the milk from the herd. Milk even from tuberculin-tested herds, therefore, should be pasteurized, as it is the only reliable safeguard. Fortunately, all the large wholesale distributors of milk safeguard themselves and the public by pasteurization.

Dr. A. H. Macdonald is evidently not acquainted with the accepted theories regarding "immunity."

Legislation on this question is long overdue, and the sooner this question is definitely settled the better. Cows' milk, from any source, should be forbidden for human consumption unless it has been pasteurized. Economics and politics should not be considered when the health of the community can be safeguarded by such simple means.

I visualize in the future the invention of a wonderful machine in which grass will be put in at one end and milk will be extracted at the other. This will have one advantage, I trust, and that is it will be free of all germs, but I have doubts about its epicurean value. In the meantime let us proceed with compulsory pasteurization.—I am, etc.,

"BOVINE."

Control of Venereal Diseases

SIR,—Quotations divorced from their context are always misleading, so Dr. E. W. Assinder's doubts expressed in your issue of Dec. 19 (p. 740) as to the accuracy of my statement that "there is not the same sense of shame with regard to V.D. in Scandinavia as there is in this country" is not wholly surprising. I would be truly distressed if it were thought that my comments were directed against the ideals and mode of life in the Scandinavian countries. On the contrary, my admiration is so great that I constantly speak of their very real democracy, social conditions, and advanced medical standards with profound respect tinged with envy.

What I tried to say, no doubt ineptly, was that the Scandinavian attitude towards sex differed from that of the conventional Anglo-Saxon in being more forthright. For example, in more than one V.D. clinic women nurses staffed the male clinics, arranged irrigation apparatus, and so on, and in one electrical department (not connected with a V.D. clinic) I saw two women and one man lying under the one lamp for lupus treatment, with respectively neck, arm, and leg exposed. I believe that either of these conditions of work or treatment would be unusual in a British hospital; though given sufficiently true *pudor* as opposed to mere prudishness, there is nothing but what is natural in either situation. My impression was that, especially in Sweden, the desire to be healthy was so strong that treatment for V.D. was taken eagerly when required so as to re-establish health.

I have many times had to deal with the sense of shame of married women infected by their husbands, a shame so profound that they dislike the very thought of attending a V.D. clinic lest they feel further degraded by "having to sit with such women as are sure to come there." A very great deal of time, patience, and persuasion has often to be spent in women's clinics to get such married women to attend because of this deep-rooted elemental feeling. They have to be educated in the clinic so as to change that feeling for the constructive wish for health and freedom from infection.

Alongside this desire for health one would wish that in young people of both sexes self-respect and the ideal of continence could be inculcated by precept and example. But "false shame" is a deterrent to clinic attendance, and is in the end anti-social, leading too often to cessation of treatment when relief of symptoms has been obtained, without persistence till complete freedom from infection is secured.—I am, etc.,

London, W.1. MARGARET RORKE.

SIR,—Defence Regulation 33B is a move in the right direction, but I doubt if it will carry us very far. I have had many years' experience in the treatment of venereal diseases as surgeon in charge of several clinics, and it has always been my endeavour to get contacts under control. Several methods are employed, the chief being that of sending a note by the patient to the contact explaining the situation and asking him or her to attend the clinic for examination and treatment if found necessary. What is the result? We are told: the name and address of the contact are unknown; the contact cannot be found or has left the district; the note has been delivered but the contact refuses to attend; when the name and address have been given and a note posted it is returned marked "Name unknown" or "Gone away"; when a health visitor has called she finds that the wrong address has been given; she is often refused admission, or, when admitted, receives an indignant denial that he or she is involved. A few attend.

Several years ago I opened a discussion before the Society of Medical Officers of Health on the subect of the desirability of making venereal diseases notifiable and treatment compulsory. I stressed the point that there would be no publicity and that only those who refused to be treated or those who defaulted would be affected by the law. The opinion expressed was that it would drive V.D. underground and do more harm than good. The subject is difficult, but now, with so many of the population in the public services and under control, legislation should be easier.—I am, etc.,

Hampstead, N.W.3. HAMISH NICOL, F.R.C.S.

Preparation of the Hands for Operation

SIR,—When I did my surgical dressing in the old Royal Infirmary at Newcastle-upon-Tyne in 1896 gloves were not used and the surgeons relied entirely on the antiseptic technique. Rutherford Morison was most particular, and tried out all the known methods of hand preparation. At that time he recognized the importance of smooth skin, and every night in life rubbed his hands all over with glycerin. His favourite antiseptic for the hands and the skin of the patient was 1 in 1,000 perchloride of mercury in watery solution. This always made my own hands desquamate, but I subsequently discovered that I could use 1 in 1,000 biniodide of mercury year in year out without producing any roughness. Morison's results in wound healing were wonderful. I have never seen better, but in addition to hand preparation he was most careful and punctilious about all the details of wound management. Nonetheless he did have runs of mild infection for which we could not account. About 1904, when I was assisting him regularly, we began to use the thick, heavy rubber gloves so largely employed by the French surgeons up to recent times. These were not boiled but sterilized by long soaking in antiseptic solution. Soon after the adoption of the thin rubber gloves, about 1906, boiling became the usual method of sterilization.

Only those surgeons who have operated without gloves and with soft marine sponges instead of gauze swabs can have enjoyed the pure delight of operating. But I should be sorry to have to do without gloves because, since their adoption, satisfactory wound healing has been more uniform, and they are the best protection against infection of the surgeon's hands. If we must do without gloves it is more than ever important to take care of the hands by avoiding all unnecessary risks of contamination both in our work and socially (the late Prof. Garre of Bonn lamented that he could not help his wife in the garden because he had to put his hands in his pockets to keep them clean!). We must also keep the hands smooth. For antiseptics to be efficient they must soak into the surface skin, the nails, etc., and it takes some time and repeated use of chemical antiseptics for these structures to remain saturated. In the pre-glove days we used to notice that it was after the surgeon's holidays when he had been away from antiseptics for some weeks that he was most often annoyed by outbreaks of mild infection among his wounds.—I am, etc.,

British Postgraduate Medical School. G. GREY TURNER.

Erythroblastosis Foetalis

SIR,—For the reasons given in his letter (Dec. 19, p. 738) I would support Dr. Herbert Levy's suggestion that the title "haemolytic disease of the newborn" is an even better and more accurate substitute for "erythroblastosis foetalis" than "haemolytic anaemia of the newborn," and I hope that this title will be universally adopted.

I am familiar with both the types of bone lesions mentioned by Dr. Levy. The first, in which the long bones show, as described by Follis *et al.* (1942), zones of increased and decreased density, occurred in one of my patients who suffered from congenital haemolytic anaemia, and who, in spite of

treatment, remained anaemic until her death at the age of 8 months. A description of the *x*-ray appearances of this child's long bones, together with excellent illustrations, has been put on record by my colleague Dr. Teall (1939).

The other type of bone disease (osteitis fibrosa disseminata, or polyostic fibrodysplasia) was the particular form of bone change to which I referred when I wrote of the "ghastly sequelae" of haemolytic disease of the newborn. This sequel was first described by my colleague Dr. Frances Braid (1932), although this fact seems to be completely overlooked by most of the writers on the subject. In 1938, in a letter to the *Lancet* commenting on a paper by Robson and Todd (1938), I pressed Dr. Braid's claim for priority, and at the same time reported another case which was then under my own care. In 1940 Dr. Braid wrote a further paper having the title "Osseous Dystrophy following Icterus Gravis Neonatorum; Generalized Osteitis Fibrosa with Areas of Pigmentation of the Skin and Precocious Puberty in the Female," in which she included a full description of my patient. In the recent contribution by Falconer and Cope (1942) Dr. Braid's second paper is discussed, but there is not any reference to her first paper. Although the paper of Albright and his colleagues did not appear until 1937, Falconer and Cope refer to this condition as Albright's disease and do not accept it as a sequel of icterus gravis, although on the basis of 4 out of 27 cases showing this combination they do think, as stated by Dr. Levy, that "its frequency seems to admit more than a chance association."

I agree with Dr. Levy that since haemolytic disease of the newborn may occur without jaundice some examples of the association between it and this form of bone disease may have been overlooked; furthermore, unless this possible association is borne in mind inquiries into the patient's past history may not be as thorough as is desirable.—I am, etc.,

Birmingham. LEONARD G. PARSONS.

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High Flying for Whoopers

SIR,—If, as seems possible, the success of this treatment (*Journal*, Dec. 26, p. 758) and that of exposure to a low-pressure chamber is due, as it may be, to want of oxygen by the infecting agent, exposure to partly de-oxygenated air may be equally effective; this is as easy to apply as is oxygen treatment. A cylinder of nitrogen with 10% oxygen can be obtained, and the mixture allowed to flow into a simple form of breathing mask.—I am, etc.,

Chalfont St. Peter. LEONARD HILL.

The Dysentery Carrier

SIR,—I note that attention is gradually, if somewhat belatedly, being focused on the subject of dysentery in this country as though it were a newcomer. In actual fact bacillary dysentery—as well as malaria—was once rife here, and a state of residual endemicity may be found to-day in many rural areas. Its propagation is not by any means entirely due to carriers, and it may easily be acquired by townspeople in the course of an afternoon's picnic in an infected area or by eating uncooked salads grown on land manured by human excreta. I had several cases of the latter kind two years ago, all traced to their source. Only a few years ago the medical officer of health of a large rural district denied its prevalence in his area until I proved it both by culture and agglutination to his reluctant satisfaction. He described it as "epidemic diarrhoea."

I have no doubt whatever that the intractable disease known as chronic ulcerative colitis usually begins as an unrecognized acute bacillary dysentery, which, in the absence of efficient early treatment, develops into the resistant and often fatal condition with which many of us are familiar. ("Ulcerative Colitis: What is it?" H. M. Stanley Turner, *Guy's Hosp. Gaz.*, 1936.) Why the ulcers should fail to heal and why certain cases should assume all the characters of chronic ulcerative colitis is another matter. It possibly depends on several factors, of which secondary infection and a failure to assimilate the small amount of vitamins (? B complex and C) contained in a necessarily restricted diet may be two.

Prof. Gustav Singer (Dec. 26, p. 765) is right, of course, to stress the need for sigmoidoscopy. It is often possible in bacillary dysentery to obtain positive swabs from the bases of ulcers even after repeated negative stool cultures.

I think the important thing is for general practitioners in this country to realize that acute bacillary dysentery is a disease which must be included in the pathological repertoire of this country and is not a monopoly of the tropical practitioner; that stool cultures are likely to be negative if specimens are transmitted to the laboratory by post unless emulsified with glycerin–saline; and that specimens should be taken as early as possible in the disease and preferably be transmitted at once by hand and kept warm in transit.

There are many villages where it is said that "diarrhoea goes through the village" once or twice a year and where on inquiry it will be found that a large proportion of cases show the distinctive syndrome of colic, frequent stools, passage of blood and mucus, and tenesmus. In such villages the prevailing type of conservancy is the earth closet and the defective domestic well in close proximity.—I am, etc.,

Brookwood, Surrey. H. M. STANLEY TURNER.

SIR,—With reference to the letters of Dr. Ian Taylor (Nov. 21, p. 618) and Prof. Gustav Singer (Dec. 26, p. 765) may I report some experiences on the spread of dysentery during and after the last war. In a great number of post-mortem examinations I have observed that dysentery bacilli, even of the less virulent Flexner group, were often found in the patients' mesocolic glands, although the patients died of causes other than dysentery. Previously I had reported that occasionally the bacilli could be found in the blood and in the urine of a dysentery patient. It was important, as in the case of cerebro-spinal meningitis, that the material should be examined as fresh as possible and be kept at body temperature. We always endeavoured to take it from the lesion as recommended by Singer, but it is not necessary to do it with a speculum, and the results are equally superior to the examination of the stools if simple swabs are taken from the rectum and plated out immediately. In a recent case the pathologist followed this suggestion, and immediately obtained a Sonne bacillus in a small epidemic where the routine examination of other cases had given negative results.

It was assumed that, apart from direct contact by bacilli carriers or dysentery cases, flies might transfer the germs from faeces and other infected materials on to food. In pre-war times great care was rightly taken in many countries to prevent food from being contaminated by touch—both of shop assistants and customers—or by flies. Nobody was allowed to touch food in shops, and this was prevented either by wrapping the food (bread, biscuits, etc.) in transparent paper or by placing it under glass protection, which also prevented contamination by droplets (Tb!). Shop assistants were instructed not to handle food which was to be eaten without previous cooking—e.g., butter, cheese, ham, etc.—but to use instruments—forks, knives, and forceps. If proper supervision and a warning would be given to the food shops and to the public, I feel sure that the number of dysentery cases could be greatly reduced. I would further recommend wire netting or muslin of narrow mesh for protection against flies.—I am, etc.,

Buxton. E. M. FRAENKEL.

Joint Committee on Rheumatism and Orthopaedics

SIR,—The article in the *Times* of Dec. 29 giving notice of the formation of a Joint Standing Advisory Committee of the Empire Rheumatism Council and British Orthopaedic Association is one to be welcomed. Some wheels turn slowly, others, especially in wartime, fast.

The annotation in the *Journal* of April 26, 1941 (p. 633), called for just this kind of collaboration between orthopaedists and, for want of a better name, rheumatologists. Subsequent correspondence was anything but laudatory, especially from the orthopaedic group. Have they changed their "spots"? If so this is good news. Or are they dissenting among themselves? We notice, however, that there is no recognition or official representation on this advisory committee of the British Red Cross Clinic for Rheumatism, the pioneers of the movement.

It is true that two of the members (one "acting for") of this committee are also physicians at the clinic in peacetime, but they are not on this committee representing the Red Cross. We also note that they say the committee "should be constituted of equal, or nearly equal, numbers of representatives of both organizations." The committee consists of 14 members, 8 of whom hold the F.R.C.S., and 5 medical qualifications rather than surgical. This is nearly a two to one representation.—We are, etc.,

M. B. RAY.
C. B. HEALD.
BERTRAM S. NISSÉ.

London, W.1.

Tetanus

SIR,—I was interested in Dr. Leslie Cole's article on tetanus (Nov. 7, p. 550) and in the letter of Dr. J. H. Hannan (Nov. 21, p. 619). I thought the following case unusual and of sufficient interest to merit publication.

The patient, a healthy male of 58 years, consulted me in April, 1940, complaining of stiffness in the neck. After 7 days he developed tetanus with clonic spasms. There was a history of his pricking his thumb some weeks previously while planting rose trees, but no injury or foreign body could be detected. A.T.S. 200,000 units was given intravenously and recovery was rapid. Three weeks later he developed acute retention due to an enlarged prostate, and a de Pezzer catheter was introduced. Prostatectomy was not performed until Sept., 1940, as his general condition was poor.

On Oct. 12 he complained of stiffness in the jaws, and gradually this become generalized and eventually he got clonic spasms. It was not until Dec. 14 that I repeated serum. This time I gave it by the intramuscular route in small repeated doses until I had given 100,000 units. There was a good improvement in 48 hours, but it was several weeks before the tonic spasm had disappeared. The patient returned again in Oct., 1941, complaining of stiffness of the jaws, which developed into typical tetanus with clonic spasms. I repeated 100,000 units A.T.S. intramuscularly in gradually increasing doses and he was fully recovered in 14 days. I then laid open the suspected thumb and removed a thorn. Since then the patient has remained well.

This case completely disproves Dr. Hannan's idea of trusting to the body forming antiserum. It would also point to the advisability of giving serum in doubtful wounds and of not trusting to active immunization.—I am, etc.,

Larne, Co. Antrim. HUGH WILSON.

Stilboestrol in Cancer

SIR,—I thank Dr. J. A. Vaughan (Dec. 19, p. 737) for drawing attention to my letter in the *Journal* of July 27, 1940. She ought to know that the patient referred to therein ultimately died. His was a well-advanced case, and as the tablets of stilboestrol caused nausea he refused further medication. There is no doubt, however, about the rapid retrogression in the size of the growth. I believe I was rather timid about dosage and that larger amounts should be administered by the intramuscular route.

Briefly, I consider that what happens in the genesis of cancer is this: there is overactivity of the anterior pituitary with excessive secretion of the gonadotrophic hormone, which is offset by the production of oestrin, there being a physiological antagonism between the two. Indeed it is very likely that when the amount of oestrin reaches peak level it inhibits altogether for the time being further secretion of the pituitary hormone. After middle life, when the generative organs fail, the ovary no longer responds to the whip of the gonadotrophic hormone and there is little or no oestrin to restrain the activities of this. It thus finds other cells to respond to its stimulation—namely, the young and perhaps immature cells of some tissue which is continually being replaced as the result of prolonged irritation. These are forced to grow too rapidly and form a tumour, the immature cells of which in their turn are lashed by the gonadotrophic hormone to reproduce. There are two constituents of this hormone—prolan A and B; probably the one is concerned in the development of cancer and the other in that of sarcoma.

It is gratifying to find in late issues of the *Journal* further evidence of the beneficial action of stilboestrol in malignant disease.—I am, etc.,

Wigan. J. THOMSON SHIRLAW.

Adder Bite

SIR,—In his medical memorandum on adder bite (Nov. 21, p. 608) Dr. Paul Szekely asks: "Is there any specific or satisfactory polyvalent serum against adder bite in Great Britain, and, if so, is the serum to be administered in every instance?"

The answer to the first question is, unfortunately, in the negative. A certain amount of the Pasteur Institute polyvalent (viper) anti-venom serum used to be imported annually, but this source has dried up since the fall of France. None has ever been made commercially in this country so far as I know, but it is to be hoped that the matter will be taken up, as it is something of a minor medical disgrace that the recognized scientific antidote should be unobtainable in a country which abounds with adders and in which a small number of persons are bitten annually. Deaths are fortunately few, but they could probably all be prevented if serum were obtainable and administered within the first few hours.

All young children who are bitten ought to receive an injection, as the great majority of these have a very alarming illness, and it is in this age group that the majority of the deaths occur. In debilitated and elderly persons, also, serum is advisable. In the teens and early adult life milder reactions are the rule, as in the case of Dr. Szekely's patient, aged 23. As this case was not admitted until 23 hours had elapsed after the bite, it was too late for serum administration had it been available.—I am, etc.,

Hereford CHAS. W. WALKER.

Hand and Finger Lesions

SIR,—Surg. Cmdr. J. B. Oldham's letter (Dec. 12, p. 706) brings to light a state of affairs that is no mere myth and one that is worthy of immediate publicity. There is no doubt that much unfortunate surgery is performed on traumatic afflictions of the hand and fingers, and in explanation the following suggestions may be advanced: (1) Inadequate undergraduate teaching; (2) lack of knowledge of special mechanics of the hand; (3) unsuitable instruments and surgical technique; (4) misapplied radical surgery; (5) ignorance of recent advances in reconstructive surgery of this region.

The practical solution of this problem lies in the centralization, where possible, of these cases to units which are equipped to deal with them. The collective experience of these units should be crystallized and published, and a real advance in this neglected sphere will have been made.

Viewing the subject from the reconstructive angle it is no exaggeration to state that over 80% of late reparative surgery is made necessary by inadequate or misdirected primary treatment. These cases fall into four main groups: (1) Acute infections: misplaced incisions causing superficial and deep scar contractures. (2) Lacerations: failure to procure primary healing and to realize indications for skin grafting. (3) Fractures: disregard of established orthopaedic principles. (4) Burns: (*a*) delay in primary healing; (*b*) scar contracture due to avoidable secondary infection and uncontrolled oedema; (*c*) deformities due to indifferent splintage.

It can thus be seen that at a time when effective man-power is of paramount importance this constitutes a wastage which should be minimized by every possible means.—I am, etc.,

St. Albans. JOHN N. BARRON.

Prevention of Blindness

SIR,—In your issue of Sept. 10, 1938, you kindly afforded me a little space in which I reported having drawn the attention of representatives of local authorities to certain aspects of the administration of the Public Health Act, 1936, Section 176, and the Blind Persons Act, 1938. Shortly after the publication of my communication the catastrophe of war fell upon us. In spite of this, public opinion and, I am glad to say, administrative opinion have become insistent that greater activity should be shown in an attempt to initiate further facilities for research in ophthalmology (prevention of blindness). The trend of public opinion is substantiated by the recent foundation of two ophthalmological research units: one in Oxford University and another, jointly, at the Royal College of Surgeons and the Royal Eye Hospital.

In view of the fact that much thought is being devoted to great changes in the organization of medical work after

the war, may I refer to my letter of Sept. 10, 1938, and especially the suggestion that such authorities upon whom falls or will fall the burden of administration of the Blind Persons Act should be asked to contribute 1% of their annual expenditure on blind welfare to a central ophthalmological research board, representative of the contributing authorities and the ophthalmic branch of the medical profession, which would finance approved research units.

It is probable that some of the developing Regional Hospital Councils will desire to establish their own ophthalmological research units in local universities, but some co-ordination effort will be highly desirable, and this could be secured by a central ophthalmological research board. Pending the establishment of such a central authority—from experience I am well aware of the possible delay—local authorities, voluntary agencies, and private individuals are asked to contribute generously in support of progressive efforts of those research units already established.—I am, etc.,

Leeds. C. G. KAY SHARP.

Phosphorus Poisoning and Blood Urea

SIR,—Mr. A. J. Blaxland and Dr. G. P. C. Claridge (Dec. 5, p. 664), in reporting their case of death following wounding with an explosive bullet, seem to have overlooked one important fact which should surely have influenced their diagnosis. This is the height of the blood urea (453 mg. per 100 c.cm.) on the day before death. In cases of hepatic failure both experiment and observation have shown that failure to "de-aminize" the blood amino-acids causes the level of these to rise markedly with a corresponding fall in the level of the blood urea, which may be so extreme that it vanishes from the urine. Not only is the high blood urea in this case against the diagnosis of liver failure, but the finding of what must have been fairly severe lesions in the kidney tubules would indicate that some form of renal failure had occurred. Whether this was due to incompatible transfusion or other causes it would now be difficult to say. The sudden onset of the anuria is puzzling, but so is the finding of liver necrosis microscopically.

To sum up, I feel that although this case was presented as one of acute phosphorus poisoning, without far more extensive investigations than have been reported it could certainly not be supported.—I am, etc.,

Coulsdon, Surrey. R. E. REWELL.

Periodic Medical Examination

SIR,—In his most valuable letter (Dec. 12, p. 709) Dr. S. T. Beggs has drawn attention to the increasingly important part played in the maintenance of maximum health by periodic medical examination. In the Friends' Ambulance Unit applicants are submitted to a short medical examination, and those whose health is obviously defective are weeded out. Some time later a much fuller examination is made. This includes functional tests, miniature *x*-ray of the chest, and study of the physical type together with a full clinical examination, taking in all about an hour.

This overhaul has revealed a number of progressive conditions such as bronchiectasis, bad teeth, chronic nephritis, and signs of maldeveloped physique. These persons have been either referred for specialist treatment or advised corrective exercise and games. Morbid interest in illness does not appear to be induced by examination under these circumstances, but rather is relief of mind experienced when some imagined trouble such as high blood pressure, tendency to hernia, or weak heart is shown to be absent. National fitness continues to be a matter of first importance in war and post-war planning. For this reason a method that detects cryptic disease and latent ill-health holds in medical planning a prime place.—I am, etc.,

London, W.C.1. H. F. BARNARD.

J. F. Sadusk and B. G. Anderson (*Amer. J. med. Sci.*, 1942, **203**, 397), who record an illustrative case, indicate the rarity of chancre of the gum by the fact that it accounts for only 0.46 to 1.4% of extragenital chancres, and that only 157 examples are on record, very few of which are in the American and English literature. The present case was that of a woman aged 19 who denied any sexual perversion, but her partner was found to have secondary syphilis.

Obituary

DAN A. POWELL, M.D.

Wales has suffered a great loss by the untimely death on Dec. 21, 1942, of Dr. Dan Powell, principal medical officer of the Welsh National Memorial Association for the Prevention and Treatment of Tuberculosis. Born at Bedlinog (Glam.) in 1884, he was educated at Pengam School and pursued his medical studies at the University College of South Wales and Monmouthshire, Cardiff, and Charing Cross Hospital, London. He was a University Exhibitioner at the hospital and graduated M.B., B.S.Lond. with honours in medicine in 1909, proceeding to the M.D. in the following year. He had qualified as L.R.C.P., M.R.C.S. in 1908. After holding a number of resident posts, including house-physician, obstetric house-surgeon, and R.M.O., at Charing Cross Hospital, he was appointed as one of the first tuberculosis physicians of the association in 1912, serving the area of Anglesey and Caernarvonshire. In 1921 he was transferred to the post of medical superintendent of the North Wales Sanatorium, Denbigh. In 1926 he became deputy principal medical officer, and when the principal post fell vacant, by the retirement of Prof. Lyle Cummins in 1927, he succeeded to it. He had served, first as lieutenant and then as captain, throughout the war of 1914-18, spending three years on the Western Front.

Powell was a man whose clinical capacity impressed itself on all who made contact with him early in his career. His administrative ability soon became manifest when he joined the association, and was responsible for the rapid promotion which brought him to its head. Indeed the two qualities have seldom been better exemplified in one person. He was not merely an office man. Throughout his fifteen years as P.M.O. he kept in constant personal touch with the association's widespread institutions and institutes, and with their officers, young and old. He had the administrative acumen to seek expert guidance wherever it could be found, and the judgment and character to form his own conclusions and take full responsibility for them.

During his term of office the progress of clinical knowledge brought about many changes in method and institutional procedure. The bed accommodation grew from 1,400 to 1,820. There was a great expansion of the consulting staff and of the facilities for radiological and bacteriological diagnosis, light treatment, and the surgical treatment of pulmonary tuberculosis. He had devoted much attention to miniature radiography and had worked out a plan of mass radiography for Wales before the Ministry's national scheme was inaugurated. He was a patriotic Welshman and rightly appreciated the importance of appointing officers native to the land and speaking its language, but only in so far as this policy would enhance the efficiency of the association. To an increasing extent in recent years he was serving on central bodies; he was chairman of the Joint Tuberculosis Council, member of the Standing Advisory Committee on Tuberculosis, the M.R.C. Committee on Industrial Pulmonary Disease, and the Prophit Bequest Committee of the Royal College of Physicians. In the Principality he was a member of the Councils of the Prince of Wales Hospital, the National Library of Wales, and the Welsh National School of Medicine, which latter body he also served as an honorary lecturer in the department of tuberculosis. He was an active member of the South Wales and Monmouthshire Branch and the Cardiff Division of the B.M.A.; he was chairman of the Denbigh and Flint Division in 1923-4, and when the Association met at Cardiff in 1928 he acted as vice-president of the Section of Tuberculosis; Powell was also a past president of the Welsh Branch of the Society of Medical Officers of Health. He found time among his other activities to make valuable contributions to the literature of tuberculosis, and his reports were models of clarity, brevity, and style.

Powell was a staunch friend and a most entertaining companion. He had a nice wit which he did little to exploit publicly, so that it came as a surprise to those who heard him for the first time as an after-dinner speaker. His place will

be hard to fill, and there are many in Wales who mourn his death for personal as well as public reasons. Their heartfelt sympathy goes out to Mrs. Powell, who so ably and tactfully supported him in his work.

H. MEREDITH RICHARDS, M.D.

Dr. H. M. Richards, formerly medical officer at the Ministry of Health, died in his 79th year on Dec. 25 at Oxford.

Harold Meredith Richards was educated at University College, London, and qualified M.R.C.S., L.R.C.P. in 1891. He took the M.D.Lond. in 1892, qualifying for the gold medal, and M.D. State Medicine (gold medal) in 1893. Dr. Richards was a Fellow of University College. After holding various hospital appointments he was M.O.H. and School M.O. for Croydon, and M.O.H. for Chesterfield and Dronfield. When the National Health Insurance Act was introduced he was appointed by Mr. Lloyd George in 1911 as deputy chairman of the Welsh Insurance Commissioners, returning to his native city of Cardiff. In 1920 he was appointed medical officer at the Ministry of Health, and towards the end of his service did much of the groundwork in connexion with the Local Government Act, 1929, and the transfer of Poor Law hospitals to county councils. Although at Mr. Neville Chamberlain's special wish Dr. Richards's term of service was extended beyond his 65th year, he was compelled by ill-health to resign in 1930. He was a member of several departmental committees and the author of several articles and reports on public health subjects. A man of wide culture, he was excessively shy and modest, and was regarded with deep respect by his colleagues in the Public Health Service.

WILLIAM MACLENNAN, M.B.

We regret to announce the death on Dec. 24 at the age of 77 of Dr. William MacLennan, honorary consulting physician, Western Infirmary, Glasgow.

William MacLennan received his medical education at Glasgow University, where he graduated M.B., C.M. with first-class honours and gained the Brunton Memorial Prize awarded to the most distinguished graduate in medicine of the year. He pursued postgraduate studies at London, Paris, Bonn, and Berlin, and among his various appointments was that of resident physician to the Western Infirmary, Glasgow, and house-surgeon to the Glasgow Hospital for Skin Diseases. Dr. MacLennan was also university assistant to the chair of materia medica and therapeutics at Glasgow University, and was lecturer in the same subject. He was appointed assistant physician to the Western Infirmary, but after undergoing an operation on the throat some 25 years ago he decided to give up teaching and resigned his position, being thereupon appointed honorary consulting physician. Dr. MacLennan continued in private consulting practice and for a time acted as external examiner in medicine for Aberdeen University. During the last war he was a major in the R.A.M.C. and had charge of medical units at Oakbank and Yorkhill Military Hospitals. He published several articles in the medical press, especially on gastric diseases. He was the author of a *Manual of Diseases of the Stomach for Practitioners and Students*. Dr. MacLennan was married and had one son and three daughters.

COL. THE HON. MURRAY MACLAREN, P.C., C.M.G., M.D.

We announce with regret the death at the age of 81 of Col. the Hon. Murray MacLaren, formerly Lieutenant-Governor of New Brunswick.

Murray MacLaren, the son of Dr. Laurence MacLaren, was educated at the universities of New Brunswick and of Edinburgh. He qualified M.B., C.M. in 1884, and took the M.R.C.S.Eng. in 1885. In 1888 he proceeded to the M.D.Ed. The LL.D was conferred upon him by three universities, and he was also a Fellow of the American College of Surgeons. In the last war Col. MacLaren was Officer Commanding No. 1 Canadian General Hospital, with the First Canadian Expeditionary Force; he was also Deputy Director of Medical Services, Canadian Contingents in London. He was senior consultant surgeon to St. John General Public Hospital, and in 1914 was elected President of the Canadian Medical Association. In addition to his professional life he pursued an active public career, being elected M.P. for St. John City and St. John and Albert Counties, New Brunswick, 1931-4. He was also Minister of Pensions and National Health for Canada 1930-4. His distinguished record of public service was recognized in 1935 by his appointment as Lieutenant-Governor of his native Province of New Brunswick. He was Commander, Military Order of Avis, Portugal, and received the honour of C.M.G. in 1916.

L. R. BRAITHWAITE, F.R.C.S.

W. A. writes:

Your excellent obituary notice of Mr. L. R. Braithwaite lacks one acknowledgment which I am sure he would have wished to make—namely, to his chief teacher and inspirer in the art of surgery, Mr. Edward Ward, senior surgeon and professor of surgery in his time, under whom he served as dresser and house-surgeon. No one acknowledged Mr. Ward's great influence as an example and a teacher more heartily than Lord Moynihan himself. And yet all these passing and personal traditions are only phases of the great and perennial tradition of the Leeds School of Surgery.

Dr. James E. Outhwaite writes:

As a former dresser to the late Lord Moynihan, I came in contact closely with Mr. L. R. Braithwaite, whose obituary you published last week. Every word is true and deserved. There is, however, one unfortunate error. The hospital which Mr. Braithwaite adorned, and which mourns his loss, is described variously as the Leeds General Infirmary and the Leeds Royal Infirmary. Both descriptions are wrong. It is the General Infirmary situate at Leeds. Our predecessors, both in the flesh and in the craft, who laid the foundations of this noble charity chose rather to serve humanity than one township, even though that was their own. Their choice should not be forgotten, least of all when one of the last men ever to have forgotten it was Leonard Ralph Braithwaite.

WILLIAM HENRY PAINE was born in 1859 at Usk, Monmouthshire, of humble parentage. He attended the local grammar school, and in 1874 was apprenticed to a chemist at Newport, which accounts for his claim in recent years to have had "66 years of physic." After three years at Newport, he went as dispenser assistant to Mr. Sayers of Lewisham, S.E., whose daughter he later married. From there he entered University College and Hospital as a medical student in 1880. Working as dispenser in the evenings, attending lectures and hospital practice in the daytime, and burning the midnight oil, he worked steadily through the course, qualifying M.R.C.S. in 1885. An assistantship at Highbury followed and the diploma of L.R.C.P. in 1886. Then, with a little borrowed capital, Dr. Paine married and set up his plate in the newly developing district on the boundary of Tottenham and Hornsey. Hard work and patient attention to clinical detail built him a local reputation, especially for midwifery (he attended 200 cases a year for several years), and a solid family practice extending to the third generation of patients. For a time he was parish medical officer in West Green. A long illness seriously set back his prospects in 1907-8, but with the same dogged determination he came back to build up the practice again for the sake of his young family. He continued within a stone's throw of his original house till 1934, often walking 10 to 15 miles on his daily round after the days of horses. He never learned to drive a car and disliked being driven. Throughout this long period he kept abreast of medical developments by assiduous reading and attending clinical meetings of the B.M.A. North Middlesex Division and the N.E. London Clinical Society, each of which he served as chairman and as president for a term. Dr. Paine was an active member of the Middlesex Panel Committee, and his pharmaceutical experience was invaluable when he was appointed to investigate excessive prescribing in pre-R.M.O. days. He took an active interest also in municipal politics, was president of the West Green Ratepayers' Association for 25 years and an urban councillor for 4 years. One thing that always impressed his colleagues was his gift of the right words to those whom no professional skill could cure. A gentle, lovable nature endeared him to a wide circle of friends and patients. Some of them would not let him retire, so that he was consulting as recently as 1940. But after 1937 his health began to fail, and the deaths of his elder daughter and wife in quick succession were shocks he could not sustain, and he passed peacefully away on Dec. 13, shortly before his 84th birthday, sincerely mourned by all who knew him. A married daughter and a son in practice in Northamptonshire survive him.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on Dec. 12 the following degrees were conferred:

D.M.—R. H. S. Thompson.
B.M.—R. G. White.

UNIVERSITY OF LONDON

The University has been informed that an "Ordinance to govern the Establishment, Incorporation, and Regulation of a University in Ceylon" has been passed by the State Council of Ceylon, and steps are being taken for the early inauguration of the Ceylon University.

The following have been recognized as teachers of the University in the subjects indicated in parentheses: *London Hospital Medical College:* Dr. C. Wilson (Medicine). *King's College Hospital Medical School:* Drs. W. G. Oakley and R. S. B. Pearson (Medicine).

The regulations for the Academic Postgraduate Diploma in Medical Radiology have been amended. Details of the alterations were published in the *University of London Gazette* dated Dec. 4, 1942 (p. 71).

The Sanderson-Wells Senior Prize has been awarded to A. J. Wells Beard, M.B., B.S. (St. Bartholomew's Hospital). The subjects for essays for the junior and senior prizes in 1943 are "The Role of Iron in the Nutrition of Man" and "Permanent Stigmata of Dietary Deficiencies during Infancy" respectively.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.D.—H. F. Harwood.
M.B., Ch.B.—[1 3]S. M. Green, [1 2]S. E. Keidan, [1 3]R. C. Nairn. *Part III:* D. Annis, Margaret J. Blackburn, H. O. M. Bryant, Eva V. Cooper, K. H. Dalrymple, A. S. Davidson, J. G. K. Dean, J. N. Dearnaley, P. J. Devlin, J. F. Doherty, K. E. A. Donnellan, Ann Donnelly, H. G. Frank, H. Friend, F. D. Griffiths, F. E. D. Griffiths, Elizabeth M. Harper, F. A. H. Inman, A. Jolleys, D. A. Kininmonth, E. D. G. Kirkwood, H. Lewis, R. H. Martin, E. Martinez-Alonso, A. F. Murphy, J. S. Redfern, R. L. B. Roberts, A. J. Robertson, P. L. Robinson, M. J. R. Ryan, J. M. G. Sarson, Betty Schofield, H. R. Shepherd, G. H. Thomas, Dorcen M. Watt, H. O. Williams, Margaret Woolfenden. *Passed in Separate Subjects:* Mary A. Allan, Beryl R. Bentley, K. W. Boggis, W. G. Canning, G. Davies, J. J. Lieben, I. P. Madhok, and Margaret L. Magee (Medicine, Obstetrics, and Gynaecology). Muriel C. Andrews, I. H. Foy, Eirwen M. Jones, Jean C. Miller, K. H. Oldfield, K. H. Slatter, and Nora Taggart (Medicine and Surgery). E. R. Banner, A. W. Merrick, and E. Scott (Surgery, Obstetrics, and Gynaecology). *Part II:* [5]J. Ainsworth, A. M. Brenner, [5]Constance M. Davis, P. S. Deardon, Margaret P. Diamond, E. G. Donovan, P. M. Edis, [5]K. B. N. Freeman, J. Gould, N. J. Gourdji, A. Griffith, J. E. Hall, D. A. Harbord, [5]Betty Hargreaves, E. T. Harrison, Ethel J. Higgitt, H. Holden, Winifred L. Hollick, C. Hopkins, J. G. Jones, J. D. King, R. V. Kinnish, J. W. Langley, Constance G. Lee, V. Leitner, Margaret J. Lezama, A. McPherson, W. E. S. Marshall, J. W. Maybury, J. K. Meiring, Janet B. Mercer, E. W. Parry, Sheila L. Richardson, J. J. Rivlin, [5]W. Sircus, Margaret Slater, A. Stone, A. H. Swithinbank, Barbara K. Thompson, D. W. Townley, J. G. Warbrick, Elspeth M. Whittaker, Margaret A. Williams, [4 5]R. S. Williams, F. B. Wright. *Passed in Separate Subject:* Simone J. van Son (Public Health).

[1] Second-class honours. [2] Distinction in Medicine. [3] Distinction in Obstetrics and Gynaecology. [4] Distinction in Forensic Medicine and Toxicology. [5] Distinction in Public Health.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

Mr. R. Watson-Jones will deliver a lecture under the auspices of the Dr. John Burns Fund, entitled "Surgical and Rehabilitation Treatment of Bone and Joint Injuries," in the hall of the Faculty (242, St. Vincent Street, Glasgow) on Wednesday, Jan. 13, at 4 p.m.

The Services

The King has granted permission to Lieut.-Col. M. B. H. Ritchie, D.S.O., O.B.E., late R.A.M.C., to wear the Order of George I, 4th Class, with Swords, conferred upon him by the King of the Hellenes in recognition of services in the cause of the Allies.

Col. (temp. Brig.) E. M. Cowell, C.B., C.B.E., D.S.O., T.D., has been appointed a Director of Medical Services, and has been granted the paid acting rank of major-general.

Flight Lieut. Thomas Henry Cullen, R.A.F.V.R., has been appointed M.B.E. (Military Division). The citation in the *London Gazette* of Dec. 29 reads as follows:

"A few days before the German invasion of Crete, this medical officer fell sick with dysentery at Maleme. When the heavy air attack on Maleme began, although too weak to walk properly, he immediately attended to the wounded and continued to do so under fire until his post was captured. Fl. Lieut. Cullen then established a first-aid post in a near-by village and worked alone and without sleep for the next three days, when he was joined by two doctors of the New Zealand Forces. Over 1,000 wounded were passed through this medical post before it was finally taken over by an Australian field ambulance. Fl. Lieut. Cullen displayed devotion to duty and courage of the highest order."

Temp. Surg. Lieut. R. McF. Kirkpatrick, R.N.V.R., has been awarded the D.S.C. for great gallantry, leadership, and devotion to duty in the raid on Tobruk in Sept., 1942.

Surg. Lieut. A. L. Johnson, R.C.N.V.R., has been mentioned in dispatches for services in action with enemy submarines while serving in H.M. Canadian ships.

CASUALTIES IN THE MEDICAL SERVICES

Lieut. DAVID WALTON FELL, R.A.M.C., who died of wounds in North Africa in November, was the third son of Dr. and Mrs. A. N. Fell of Colchester. He was educated at the University of London, graduating M.B., B.S. in 1938, also taking the M.R.C.S., L.R.C.P. in the same year. He held posts at St. Mary's Hospital and St. Bernard's Hospital, Southall, before entering the R.A.M.C. in February of last year. He was a member of the B.M.A. He leaves a widow.

Wounded and Prisoner of War.—War Subs. Capt. A. C. P. D Thomson, R.A.M.C.

Missing.—Capt. C. W. Peck, R.A.M.C.

Prisoners of War.—War Subs. Capt. G. A. Anderson, R.A.M.C., Capt. M. G. Braham, R.A.M.C., Major J. W. D. Bull, R.A.M.C., Lieut. R. G. Drummond, R.A.M.C., Major D. W. Gillies, R.A.M.C., Capt. J. B. Hannah, R.A.M.C., Capt. W. R. Jackson, R.A.M.C., Capt. E. R. S. Phillips, R.A.M.C., Capt. H. Silman, R.A.M.C., War Subs. Capt. B. J. Smith, R.A.M.C., Lieut. J. C. T. Sykes, R.A.M.C.

Medical Notes in Parliament

Call-up of Doctors and Protection of Practices

Sir E. GRAHAM-LITTLE inquired on Dec. 17 in how many instances the Minister of Health had overruled resolutions taken by the Central Medical War Committee on allocations of medical man-power. Mr. BROWN answered that in a comparatively few cases he had decided that recruitment of individual doctors for the Forces should be postponed for varying periods. With negligible exceptions the Committee had on reconsideration concurred in his view. No formal appeals were involved in this procedure. A doctor could apply for postponement of calling up on grounds of personal hardship or for registration as a conscientious objector in the same way as any other person.

Mr. Brown further stated that he had no power either to interpret or to enforce private arrangements made between practitioners for protection of the practices of their colleagues, although he had recommended insurance committees to assist in the operation of the scheme so far as it related to insurance practice. The right of a registered practitioner to join an insurance medical list could not be limited to participants in the Protection of Practices Scheme. The private scheme was enforceable by agreement between participating practitioners, and its general administration was undertaken by Local Medical War Committees. The scheme did not involve any infringement of the provision of the National Health Insurance Regulations as to free choice of doctor.

Medical Certificates.—Mr. ERNEST BROWN stated on Dec. 17 that insurance practitioners were required to give medical certificates only for the purposes of the National Health Insurance Acts. They were not forbidden to give and charge for certificates required for other purposes. Mr. HIGGS, who raised the matter, said that charges of 1s. or 2s. 6d. for each certificate of ill-health were made when these certificates were demanded by an employer.

Free Insulin.—Mr. ERNEST BROWN on Dec. 17 pointed out that a person insured under the National Health Insurance Acts was entitled to obtain insulin as part of his medical benefit if prescribed by the doctor attending him. Local education committees might provide insulin free or at reduced rates for children and young persons attending schools and educational institutions if the necessary sanction had been obtained. A general sanction was now being given. Local authorities had power, with the approval of the Minister of Health, to provide temporary supplies of insulin for poorer inhabitants of their districts. Mr. Brown said he was conveying his approval to the exercise of this power for the period of the war and issuing a circular drawing attention to it.

Treatment of V.D. in the Army.—Sir JAMES GRIGG stated on Dec. 17 that all soldiers returning from leave were medically examined, and if found to be suffering from venereal disease were admitted to the venereal disease departments of certain military hospitals, none of which was designated as a venereal disease hospital.

Diphtheria.—Between Jan. 1, 1940, and June 30, 1942, approximately 5,000 cases of diphtheria were notified in England and Wales among immunized children under 15. The number of deaths from diphtheria among immunized children between Jan. 1, 1942, and June 30, 1942, was 17.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* decline in the notifications of infectious diseases has been general. The only exceptions were a rise of 14 for acute pneumonia and 21 for cerebrospinal fever.

The fall in the notifications of scarlet fever took place mainly in the South, though there were rises in London and Middlesex of 28 and 26 respectively; in the North the only notable difference in the trend was an increase of 27 in Lancashire.

The subsiding of the diphtheria outbreak in Middlesex, Edmonton M.B., where there was only 1 case compared with 111 in the preceding week, was the main factor in the decline of 71 for the whole country.

There were 166 fewer cases of whooping-cough than in the preceding week: the largest decreases were those of Lancashire 45, and Middlesex 25.

Although there were only 5 fewer cases of measles than in the preceding week there were large variations within the counties. Roughly, the South experienced an increase and the North a decline. The largest of the rises were Middlesex 177, Derbyshire 121, Essex 71, Nottinghamshire 64, Durham 60, and Wales 125. The counties returning the largest drops were Lancashire 365, Yorks West Riding 133, and Northumberland 58.

There were 14 more notifications of acute pneumonia than in the preceding week, but the only variation of any size within the counties was a rise of 34 in Warwickshire; 59 of the 81 cases recorded in this county were reported from Birmingham C.B.

The incidence of cerebrospinal fever, for which a relatively large increase of 21 cases was recorded, is now at a higher level than for the past six months. The largest totals during the week were Durham 10, Lancashire 16, and Yorks West Riding 9, accounting for 36% of the cases in the country; the remaining cases were scattered throughout 26 counties.

There were 20 fewer cases of dysentery than in the preceding week; the weekly total was the lowest since the beginning of September: 42% of the cases occurred in two counties—London 24 (an increase of 6 cases), and Lancashire 23 (a decrease of 11 cases); the remaining 66 were reported from 23 counties.

In *Scotland* the chief features of the returns were the fall of 70 cases in the incidence of scarlet fever, and the rise from 16 to 26 notifications of cerebrospinal fever. The downward trend for scarlet fever was fairly general throughout the country, while the rise in cerebrospinal fever was confined to the western area, where the total rose from 11 to 22. After an interval of twelve days another case of small-pox was reported on Dec. 30 in Edinburgh. The patient was the widow of a previous victim of small-pox. This was the 36th case since Nov. 1; of these, 8 patients have died and 12 remain in hospital.

In *Eire* 8 cases of poliomyelitis were reported during the week—a further drop. Typhus has reappeared in Co. Galway, where one case was reported from the rural district of Galway.

Quarterly Returns for England and Wales

The birth rate for the September quarter was 16.1 per 1,000. This was the highest rate recorded in this quarter since 1930 and 1.0 above the average of the third quarters of 1937-41. Stillbirths were 31 per 1,000 of the total births, this being the lowest figure since registration of stillbirths began. Infant mortality was 40 per 1,000 live births, 5 below the average of the ten preceding third quarters and equal to the low record of 1939. The general death rate was 9.3 per 1,000, and was 0.7 below the average of the five preceding third quarters. As a consequence of the lowered death rate and increased birth rate the natural increase (excess of births over deaths) was, at 71,362, considerably larger than in the immediately preceding third quarters. The chief feature of the notifications of infectious diseases during this quarter was the large number, 1,724, of cases of dysentery.

Quarterly Returns for Northern Ireland

The birth rate during the third quarter of 1942 was 24.1 per 1,000, 3.8 above the average rate for the third quarters of the five years 1937-41. The infant mortality was 65 per 1,000 registered births, 3 in excess of the average of the corresponding quarters of the five preceding years. The general death rate was 11.2 per 1,000, and was 0.3 below the five-year average. The death rate from all forms of tuberculosis was 95 per 100,000, compared with 86 for the average of the September quarters of the five preceding years. The increase was due to pulmonary tuberculosis, while other forms of tuberculosis declined; the deaths were 232 and 63, as compared with 206 and 71 for the five-years average.

Returns for the Week Ending December 26

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,054, whooping-cough 837, diphtheria 731, measles 10,888, acute pneumonia 671, cerebrospinal fever 64, dysentery 103, paratyphoid 3, typhoid 6.

No. 50

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 19.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942 (a)	(b)	(c)	(d)	(e)	1941 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	96	5	26	3	2	126	12	23	3	7
Deaths		—	—				2	1		
Diphtheria	1,008	36	265	66	30	1,203	57	343	55	39
Deaths	27	2	3	3	—	29	2	5	2	3
Dysentery	113	24	44	—	1	105	4	45	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	1	—	2		—	1	—	2		—
Deaths		—	—				—	—		
Erysipelas		—	69	15	2		—	57	7	4
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				24						
Deaths	51	6	8	17	5	37	2	13	9	2
Measles	13,282	498	569	55	28	886	44	39	48	3
Deaths	14	2	1	—	2	—	—	1	—	—
Ophthalmia neonatorum	76	5	12	—	1	76	5	19	1	—
Deaths										
Paratyphoid fever	9	1	2			17	—	6	—	
Deaths	—	—	—		—	2	—		—	—
Pneumonia, influenzal*	1,003	62	9	6	4	966	54	12	1	5
Deaths (from influenza)	26	—	4	2	2	21	2	2	—	1
Pneumonia, primary			232	31				232	10	
Deaths		—		19	10		29		8	14
Polio-encephalitis, acute	—	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	12	1	1	8	—	18	2	—	6	—
Deaths		—	—				—	—		
Puerperal fever		2	7	5	—	1	1	10	1	—
Deaths		—					—			
Puerperal pyrexia	148	12	15		2	167	10	18		6
Deaths										
Relapsing fever	1	—			—	—	—			
Deaths										
Scarlet fever	2,620	176	383	95	50	1,392	45	279	61	25
Deaths	5	—	2	—	—	2	—	—	—	—
Small-pox	—	—	1		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhoid fever†	9	1	1	6	1	16	2	3	6	2
Deaths	—	—	—	1	—	—	—		1	
Typhus fever	—	—	—	1	—	—	—	—	—	—
Deaths			—	—				—	—	—
Whooping-cough	1,160	81	60	44	5	1,715	209	60	27	3
Deaths	7	—	1	6	—	11	1	4		—
Deaths (0–1 year)	348	49	69	71	23	397	38	66	25	27
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	4,567	672	615	240	129	4,462	580	621	194	156
Annual death rate (per 1,000 persons living)			13·8	16·0	‡			13·5	12·9	‡
Live births	5,901	679	828	322	249	4,910	457	731	248	203
Annual rate per 1,000 persons living			17·1	21·5	‡			14·9	16·5	‡
Stillbirths	213	20	32			205	23	30		
Rate per 1,000 total births (including stillborn)								39		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

We have much pleasure in recording an event which, to the best of our knowledge, is unique in the annals of the B.M.A.—namely, the completion by both a husband and wife of fifty years' membership of the Association. Dr. Andrew Maitland Ramsay of St. Andrews joined the B.M.A. in 1888 and his wife, Dr. Elizabeth Margaret Ramsay, in 1893.

A meeting of the Therapy Section of the Faculty of Radiologists will be held at 32, Welbeck Street, W., on Saturday, Jan. 16, at 10.15 a.m., when there will be a discussion on "The Treatment of Carcinoma of the Prostate," to be opened by Mr. E. W. Riches, Mr. I. G. Williams, and Dr. A. Haddow.

A series of talks under the heading "Reshaping Man's Heritage" will be broadcast on Fridays from 7.40 to 8 p.m., beginning Jan. 15. These talks form a counterpart to those broadcast during the autumn under the title of "Man's Place in Nature," and are intended primarily for discussion groups. The following is the full schedule as at present arranged: Jan. 15: Man's Heritage, by H. G. Wells; Jan. 22: Man's Food, by W. F. Crick and J. C. Drummond; Jan. 29: The Good Earth, by W. G. Ogg; Feb. 12: Fighting Man's Competitors, by J. W. Murro and James Fisher; Feb. 19: The Future of Food, by Sir Edward V. Appleton; Feb. 26: The Conquest of the Germ, by L. J. Witts; March 5: The Conquest of the Tropics, by H. W. Kauntze; March 12: The Banishment of Pain, by L. J. Witts; March 19: Preventive Medicine, by James M. Mackintosh; April 2: Reshaping Man's Heritage: Biology and Human Welfare; the Future, by Julian S. Huxley. The B.B.C. has also arranged a series of discussions on education under the title "Living and Learning," which will begin in the Home Service programme on Jan. 18 at 7.35 p.m. Among the issues to be discussed will be the education of young people between 14 and 20, the educational opportunities open to adults, the common school, and the place of religion in education. It is understood that medical men will take part in the discussion.

The Middlesex County Medical Society has formed a committee to initiate, encourage, and facilitate medical research. Seven big general hospitals (7,064 beds), two sanatoria (1,408 beds), one mental hospital (1,997 beds), as well as the tuberculosis and school medical officers and the central administrative staff, are represented on the committee. It is hoped to arrange teams to study especially the common and yet controversial problems of hospital medicine. The immense wealth of clinical material in the Middlesex County Service, and the excellent facilities of their pathological departments, should enable useful information to be collected.

Dr. Ronald Henry Tasker of the Burmah Oil Company is reported missing through enemy action at sea in November.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Secretary of the Journal Board, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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QUERIES AND ANSWERS

Income Tax

Employment of Wife

"PHI'S" family live in the upper part of their house, the lower part being devoted to the practice. A caretaker lives downstairs but is away two half-days each week and is not responsible for night calls. He pays his wife £1 a week for the following duties: (*a*) taking messages, etc., on two half-days a week, (*b*) taking night calls in his own absence, (*c*) advising urgent callers, etc., as to his probable whereabouts, and (*d*) engaging and supervising staff and their work in the rooms used professionally. Is he entitled to deduct the £1 a week as expenses of the practice?

*** "Phi" does not mention whether and to what extent his wife receives "pin-money"; if the £1 a week is additional to a normal allowance his claim will be strengthened. Apart from this the case seems a marginal one. Professional men generally receive some assistance from their wives—solicitors and accountants have some professional and 'phone calls at their private residences—and the point at which this sort of arrangement amounts to an employment of the wife in the practice is difficult to fix, and may well vary according to the views of the persons attempting to do so. In this case the inspector of taxes takes the view that the payment does not comply with the statutory requirement that it shall be made "wholly and exclusively . . . for the purposes of the profession." There is a chance that Commissioners might take a different view on an appeal being made, but we should not regard the chance as a good one.

Allowance for Wife

M. R. asks: "As a doctor's wife with a 168-hour week am I entitled to a rebate on income tax to the value of £80?"

*** A married man is entitled to a "personal allowance" of £140, as compared with the bachelor's allowance of £80. The section (Finance Act, 1920, Sec. 18, as subsequently amended) provides also that "if the total income of the claimant [i.e., the husband] includes any earned income of his wife, the deduction . . . shall be increased by an amount equal to nine-tenths of that earned income but not exceeding in any case eighty pounds." M. R. does not mention any "earned income" of her own against which the claim can be made. By way of illustration, however, we may point out that if her husband pays her a salary of £2 a week as fair remuneration for assistance in his professional work her liability for 1942-3 would be as follows:

Amount of remuneration			£104 0 0
Deduct—Earned income relief (1/10th)	£10 10 0		
Special allowance	£80 0 0		
		£90 10 0	
		£13 10 0	

Tax at 10s. in the £: £6 15s.

LETTERS, NOTES, ETC.

First Aid for Fractured Spine

Dr. N. PINES writes: The vital importance of correct handling of a fractured spine by first-aiders prompts me to send the following note. (1) *Diagnosis.* I usually recommend members of my class to ask the injured man, if he is conscious enough for that, to move his fingers or his toes, but not his limbs. The reason is simple: if there is no movement and no pain with this attempt at movement the spine is fractured; in fracture of any other part of the body movements and pain occur. (2) *Transportation.* The greatest danger is at the moment of turning the injured man into the desired position. Once he is already turned the possibility of further injury is lessened. That is why two years ago I constructed a special stretcher, a description and drawing of which you published on March 30, 1940 (p. 546). It consists in principle of an ordinary board, with cross-pieces, which can be folded up or fixed across at any height, thus allowing the stretcher to be fixed to the patient in the same position as that in which he is found. Only after that is the patient turned round and carried away. When fixing the stretcher one can of course arrange for the patient to be carried in the prone or the supine position.

Diphtheria with Perforation of Larynx

Dr. R. W. STEPHENSON senior medical inspector, Sudan Medical Service, writes: A child aged about 2 years was admitted to hospital with a history of two days' fever. Careful examination failed to elicit any physical signs, and as the temperature was fluctuating between 99° and 102° F. it was presumed to be a case of malaria, though blood slides were negative. Treatment with quinine was instituted and the temperature settled. On the fourth day after admission the child developed a slight cough, and later the same day emphysema of the neck. Each time the child coughed the tissues of the neck became distended with air. There was little distress or difficulty in breathing. Examination of the throat failed to reveal any abnormality and no membrane could be seen. A swab was taken and was found to contain Klebs-Loeffler bacilli. Anti-diphtheritic serum was given in full doses and the patient made an uneventful recovery.

Corrigendum

In the article entitled "Work of the Medical Corps in the U.S.S.R.," published in the *Journal* of Dec. 19, 1942, p. 734, under the cross-heading "Non-medical Personnel," faulty translation rendered incorrectly "the Red Cross and Red Serpent organizations." The name should have been "the Red Cross and Crescent organizations."